

# AHMED SHALABI

**SENIOR SOLUTIONS ARCHITECT, Multi-Cloud, Domain-Driven Design, Event-Driven Architecture**

Senior Solutions Architect with **12+ years** delivering cloud-native, microservices-based platforms across government, banking, retail, and healthcare.

With 12+ years of total engineering experience and 6+ years as a software/solution architect, I currently lead architecture at NHCI (National Housing Company Innovation, 2024–present), where I have designed ~6+ systems in the Balady citizen super-app ecosystem: payments, debts, notifications, mini-apps, identity, GIS, document management, BNPL, and the underlying infrastructure substrate. I have authored 11+ canonical High-Level Designs that now serve as the agreed architecture across engineering teams. My core strengths include Domain-Driven Design (six-bounded-context decompositions), C4 modelling as living architecture, event-driven workflows (RabbitMQ Streams · Kafka · CDC), and hybrid-cloud transitions (on-prem Kubernetes ↔ OCI Object Storage).

Currently pursuing **Arcitura Digital Transformation Solution Architect** and **AWS Solution Architect — Professional** certifications.

## LANGUAGES

Arabic: Native Speaker  
English: Very Good

## EDUCATION

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

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- **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, 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) and Python.
- **Data & messaging** PostgreSQL, Oracle 19c, MongoDB, Redis Cluster, Elasticsearch, ArcGIS / Esri, RabbitMQ, RabbitMQ Streams, Apache Kafka, Airbyte .
- **Workflow & rules** Camunda BPMN/DMN (Self-Managed Community + Enterprise), Saga compensation. Custom rule engines
- **Observability & quality** Sentry Self-Managed, ELK Stack, Prometheus · Grafana, OpenTelemetry, SonarQube, Trivy and Elastic APM
- **Identity & compliance** OAuth 2.0 / OIDC, JWT, Nafath SSO, MOMAH SSO, PCI DSS, GDPR, PDPL data masking and Sanitisation patterns
- **Frontend** Angular 8+, Carbon Design System, Flutter, Mobile Server-Driven UI (SDUI) ·
- **DevOps & tooling** Azure DevOps / TFS, Jenkins, GitHub Actions, F5 LB, NGINX Pandoc, PlantUML, Structurizr and 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

## 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.
- 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 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) designed K8s cluster sizing for staging/DevOps IoT full on-prem . 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.

### **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: health certificate.

## 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 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 sanitization 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 feature development against PI/sprint goals; clean-code refactors, production-issue resolution with root-cause analysis, and high-capacity load optimization that streamlined the deployment process.

## HR PROMOTION TOOL

Implemented features aligned with PI/sprint goals on an OpenShift cluster with a robust CI/CD pipeline. Performance enhancement of existing functionality and production-issue resolution. OpenShift.

## I-ESTIMATE TOOL

Translated customer business needs into technical requirements; provided microservices architecture expertise. Authored technical proposals outlining microservices benefits and transformed manual Excel processes into an automated, navigable system.

## DUBAI HEALTH AUTHORITY (DHA)

Digital transformation of application architecture to microservices; selected appropriate technologies per service. Designed backend services improving transactionality between the web UI and the service tier and developed a self-assessment service with a custom rule engine for dynamic configuration.

## FIRST ABU DHABI BANK (FAB)

Supported the KSA backend team to deliver sprint goals and implement new security measures. Developed DataPower scripts for external-system integration, implemented secure user-data handling with a PCI database in DataPower, and built / maintained CI/CD service pipelines. DataPower · PCI database.

## PANORAMA

Led digital transformation to a microservices architecture; developed a dynamic new app interface deployed to an OpenShift cluster. Updated data models for enhanced user customization. OpenShift.

## L2C

Transitioned a monolithic application to microservices; designed and implemented Spring Boot services for new components. Enhanced scalability and efficiency and published shared components to Nexus (npm + Maven), Spring Boot, Nexus.

## ORANGE

Developed RESTful APIs for service integration and implemented data-protection security protocols. Built customer-management microservices and optimized database queries for performance.

## REFERENCES

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- Lead solutions architect  
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