Vikram Desai Principal Software Architect

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PROFILE SUMMARY

- **Principal Software Architect** with **15 years** in **connected medical device software**, leading architecture for **remote monitoring platforms** under **FDA and HIPAA** rules.
- Hands-on with **Java**, **Spring Boot**, **AWS** (EKS, Aurora, IoT Core), **Apache Kafka**, **PostgreSQL**, **FHIR**, **HL7 v2** and **Structurizr**.
- Deep expertise in **legacy modernization**, **architecture governance**, **security risk management** and **availability and recovery design** for regulated systems.
- Works with **R&D directors, quality and regulatory, product security and clinical teams** on roadmaps, design reviews and FDA submissions.
- Chairs the **architecture review board** for cardiac and connected care software, mentors **6 architects and staff engineers**, and wrote the **reference architecture for device data**.

TECHNICAL SKILLS

Architecture Styles & Patterns:	Microservices, modular monolith, event-driven architecture, domain-driven design, strangler fig pattern, saga pattern
Languages & Frameworks:	Java, Spring Boot, Java EE, Kotlin, Python, SQL
Cloud & Infrastructure:	AWS (EKS, Aurora, IoT Core, S3), Kubernetes, Terraform, multi-region failover
Data & Messaging:	PostgreSQL, Apache Kafka, Oracle, RabbitMQ, Debezium, Amazon DynamoDB
APIs & Integration:	REST, OpenAPI, FHIR, HL7 v2, AsyncAPI, Kong
Security & Identity:	Threat modeling (STRIDE), OAuth 2.0, mTLS, HIPAA, FDA Section 524B, IEC 62304, SBOMs
Documentation & Modeling:	C4 model, ADRs, Structurizr, arc42, UML, fitness functions

EDUCATION

University of Texas at Austin — **B.S. in Computer Science** — Austin, TX · Aug 2007 to May 2011

WORK EXPERIENCE

Medtronic — **Principal Software Architect** — Minneapolis, MN · Mar 2020 to Present

- Set the target architecture and 3-year roadmap to move the cardiac remote monitoring back end from an on-premises **Java EE** monolith to services on **AWS**, with **22 cutovers** done and no missed device transmissions.
- Chair the architecture review board for 14 teams across cardiac and connected care software, adding reference architectures and fitness functions in CI that cut late design changes by **45%** in 2 years.
- Built threat modeling into the design phase to meet FDA premarket cybersecurity requirements under Section 524B, producing threat models and SBOMs for **9 submissions** with no cybersecurity deficiency letters.
- Defined availability and recovery targets for patient data flows (RPO under 5 minutes) and ran yearly region failover tests, recovering service in **38 minutes** against a 60-minute RTO.
- Present architecture trade-offs to cardiac R&D leadership each quarter as 2-page memos, and mentor 6 architects and staff engineers, **3** of whom were promoted.

Boston Scientific — **Software Engineer to Software Architect** — Arden Hills, MN · Jul 2011 to Feb 2020

- Redesigned the LATITUDE patient management back end into 4 domain modules inside one **modular monolith**, cutting regression test time from 9 hours to **2**.
- Defined the **HL7** and **FHIR** integration layer that sends device reports to hospital EHRs, growing connected clinics from 300 to **1,100**.
- Wrote the first 30 ADRs for the remote monitoring program and led the build-versus-buy review that replaced an in-house message broker with **RabbitMQ**, saving **2 engineer-years** of work.