## Industry

Medical Devices

## Skills

Front-end     Back-end

Cloud     Devops

Mobile

## Technologies

aws

## Background

ITJ's client is an innovative medical device company with a mission to improve patients' lives. Headquartered in the U.S. and with software engineering operations in southern California and now Tijuana, Mexico, the company was founded in the early 2000s to develop insulin delivery solutions for the millions of children and adults who have diabetes. Adopting a digitally-driven technology strategy to pursue its mission, ITJ's client has created a revolutionary Internet of Medical Things (or IoMT) smart medical device. As a result, it has eliminated many of the associated issues with conventional diabetes treatment. The company is recognized as a global market-leading medical device organization, and its IoMT solution has enormous utility beyond insulin delivery and monitoring.

The innovation and opportunity of ITJ's client are directly linked to the company's ongoing commitment to software engineering investments in IoMT. This technology offers advantages such as real-time monitoring, improved drug management, improved patient outcomes, and reduction in medical expenditure. In addition, the company purposefully designed and engineered its solution to be both a convenient and discreet wearable device and a 'smart' device, enabling the delivery of value to patients, healthcare professionals, and providers, all from one device.

## Business Challenge

To meet its ambitious product roadmap and go-to-market goals -- not just for the ground-breaking insulin delivery solution but also for future innovations in drug delivery and monitoring solutions, ITJ's client recognized it would need to expand its digital engineering capacity significantly.

Specifically, the company estimated it would need to quickly double the size of its 80-person software engineering team based in the U.S. Since the FDA recently had approved -- the first of its kind for such a device -- the clock was ticking. However, the company also recognized a significant barrier: The scarcity and high cost of software engineering talent in the U.S. (particularly in southern California). It would severely impede their ability to cost-effectively source and operate its own digital engineering talent it sought to expand capacity rapidly.

Software engineers involved with medical devices need to possess a thorough understanding of quality management systems (QMS) and software development processes compliant with FDA regulations and other global medical device quality standards, such as ISO 13485. Given this situation, ITJ's client decided it needed to look beyond the U.S. for a solution to its engineering staffing objectives.

Ultimately the company determined that Mexico -- with its favorable time zone proximity and world-class technology engineering labor force, readily available at a fraction of the cost of similarly skilled engineers in the U.S. -- would be a good fit for its long-term critical staffing needs. But in deciding to enter the Mexican labor market, without any previous presence or experience in the country at that time, the company's leadership understood it would need an experienced suitable partner who could deliver and operate mission-critical software engineering capabilities in the region on behalf of the company. This led the company to select ITJ, specialists in enabling its clients to build software engineering Centers of Excellence in Mexico.

# How We Did It

Unlike typical nearshore software development service providers, who simply serve as a source of temporary staff augmentation or undertake short term development project work, ITJ partners with clients to understand and help meet their long term goals, including a focus on the company's distinct needs for staffing, sourcing, and innovation; and the creation of purpose-built, high quality, client-dedicated software engineering teams under the Build, Operate, Transfer (BOT) outsourcing model.

To best address this particular client's current and future growth needs, ITJ recommended the creation of a software Center of Excellence -- defined as a hub of Agile productivity and innovation purpose-built as an extension of existing client organization engineering resources -- in Tijuana. This offered numerous quality and productivity benefits resulting from being close to the client's existing presence in southern California. It also gave the company access to a region where great, highly-capable local technical talent could quickly fill the company's capacity needs aligning with its aggressive time-to-market strategy.

With the client's Product Management and Technology leadership, ITJ started by conducting a series of needs analysis and discovery exercises to map out the timetable, staffing plan, and facilities requirements for the new Center of Excellence (CoE). Then leveraging its extensive network across Mexico and the rest of LATAM and its proprietary talent acquisition processes, ITJ quickly set about sourcing, screening, selecting, and hiring the right engineers and local management team needed to align with the client's product roadmap and go-to-market plans.

Essential technology skills needed for the company's mobile and cloud-based strategy included SWIFT, Java, Python, and AWS. In addition, team members would need to be experienced working in regulated development environments (FDA & ISO 13465 quality standards) under an Agile/Scrum approach (to maximize quality, predictability, productivity, and innovation); as well as needing to be practitioners of software engineering best practices -- TDD, DDD, Solid Principles, CI/CD, etc.

But beyond simply assembling expert Scrum teams for its clients with appropriate hard technical skills, ITJ also recognizes the importance of behavioral traits such as ownership, learning agility, and team collaboration -- technology skills can be taught, but behaviors are far more challenging to change. Consequently, in building the CoE for its client, as it does for all its clients during the hiring process, ITJ conducted behavioral assessments and technical proficiency testing to ensure only the best

candidates were hired. At the same time, ITJ secured and prepared office space in Tijuana's upscale and modern Zona Rio business district. Being only a short distance away from everywhere in southern California and a short flight away from the Bay Area, this ideal location for the CoE meant the new engineering teams could be quickly integrated with the company's existing organization and easily collaborate in real-time, including in-person collaboration when needed.

ITJ hired and built out the initial CoE Scrum teams for the company, as it does for all its clients, so it was careful to partner with the client's leadership team to plan and execute a systematic and thorough approach to onboarding and knowledge transfer. This critical activity expedites initial time to productivity and ensures quality and regulatory compliance from the outset. Under the BOT outsourcing model, it also establishes the CoE as a fully integrated expansion of the client's engineering capacity, which can be easily transferred when the client is ready.

In September 2019, ITJ hired the first wave of 20 software engineers within two months and continued expanding and operating the client's CoE, hiring ten new hires per month over the next 15-month period while working with the company's Product Management team and other key stakeholders. In addition, the ITJ Scrum teams adhered to two-week sprints to deliver rapid incremental product and value. ITJ also regularly reviewed and managed the teams' Quality, Predictability, Productivity, and Innovation (QPPI) performance, setting a series of Objectives and Key Results (OKR) targets supported by ongoing software engineering best practices before transferring the CoE over to the client.

## Outcome

Through its partnership with ITJ, our client accomplished its strategic goal of confidently, quickly, and cost-effectively enhancing its highly skilled digital engineering capabilities without sacrificing quality and productivity.

The company has consistently delivered on its product roadmap and time-to-market targets. The innovation rate quadrupled. The global product release schedule was accelerated -- and with the successful transition of the engineering teams in Tijuana to themselves, the company achieved further cost savings -- approximately one-third of the cost of similarly skilled U.S. resources.

Having established vastly improved predictability of market delivery for its innovation, ITJ's client is now far more confident in its multi-year product roadmap. As a result, the Tijuana CoE model is now the blueprint for much of its future digital engineering capacity expansion. Today, the company's Tijuana-based CoE operations house more than 200 software engineers.

With a staff turnover rate of less than half the industry average and having embraced the ITJ software engineering trainee program, the company is now well placed to easily scale up its capabilities focused on the continued development of its IoMT mobile and cloud-based software platform and its innovative wearable medical devices.

"We can't thank ITJ enough for helping us build a fantastic software team in Tijuana," said Mark, VP of Software Development for ITJ's client. "We are so impressed with the amazing talent of the Tijuana team."

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