daffodil

Daffodil helps a Candian healthtech company reduce door-to-balloon time for STEMI patients

Customer: A Healthtech Startup

Country: Canada

Industry: Healthcare

Our Role: Product Engineering

About Client

The client is a Canada based funded startup that provides innovative point of care medical solutions to improve the quality of medical care and speed up the treatment process for better and faster patient recovery. The company provides innovative point-of-care medical solutions, such as wearable medical devices to detect strokes, medical communication systems, and personal care applications etc.

6	**100+**	**47%**
hospitals equipped with the solution	ambulances being tracked every day	reduction in door-to-balloon time

"The daffodil team felt like a natural extension to our in-house team and they spent a considerable effort in understanding the technical requirements, designing the solution, and helping us navigate the medical regulatory process. Thanks to their efforts we were able to convert our vision into a market-ready, HIPAA compliant medical solution."

Founder and CEO

Problem

Cardiovascular diseases (CVDs) are a leading cause of deaths across the world. Prompt access to medical treatment is essential for patients who suffer from strokes, specifically people who suffer from ST-Elevation Myocardial Infarction (STEMI) stroke, as they are at a relatively high risk of death. This risk may be reduced only if the treatment is performed in a timely manner. Guidelines recommend that the interval between occurrence of the stroke and intracoronary balloon inflation (door-to-balloon (D2B) time) should be 90 minutes or less. The medical treatment for stroke, STEMI, and trauma are generally delayed due to the communication gap between the paramedics and doctors during the door-to-needle time. In order to counter this situation, the client wanted to develop a mobile-based solution that connects all the responsible stakeholders and improves the coordination and communication tasks essential to rapid assessment and care of the patients suffering from a STEMI.

Hence, the client was in the lookout for an experienced technology partner that could turn their vision into a market fit product. They singled out Daffodil Software for its hands-on knowledge of healthcare operations, compliances, and experience in developing breakthrough applications for the healthcare sector. The primary requirement was to:

- Develop an integrated mobile based solution that tracks the whereabouts of a patient's ambulance, while gathering all the information required for all the stakeholders to get the treatment started.

- Incorporate a ambulance tracking functionality in the application so that all stakeholders can track the patient and ensure preparedness for medical emergency.

- Keep the patient health information (PHI) safe and secure to meet all the regulations maintained under HIPAA compliance.

Solution

Our business analytics and software architects outlined the optimal architecture of the mobile solution, refined the functional requirements and developed a complete product vision and its development roadmap. Once the strategic plans were mutually finalized, Daffodil's team mapped the requirements onto the technology landscape. Daffodil's UI experts applied design thinking techniques and role based user stories in order to build an easy to use user interface for the application. We developed a cross-platform mobile apps for Android and iOS platforms along with a web based admin panel for role based access to information.

Once the medical personnel activates the application when a STEMI is identified, an image is taken of the electrocardiogram (ECG) and, along with the patient details, transmitted to all pertinent members of the STEMI care team (Emergency Medical Services [EMS], ED, catheterization laboratory personnel, cardiologist on call, etc. These members are immediately alerted by the application and have immediate access to the ECG and relevant patient information in real time.
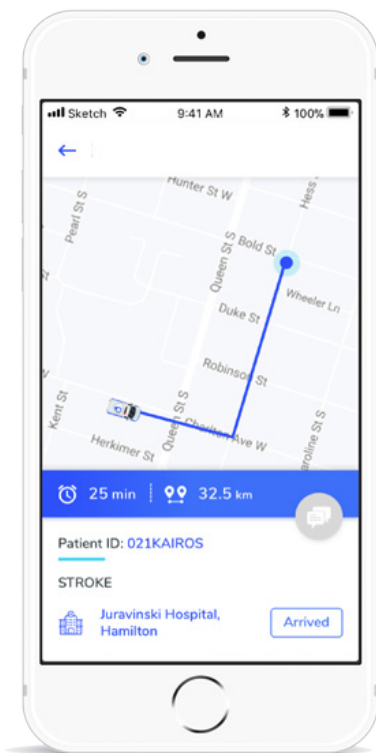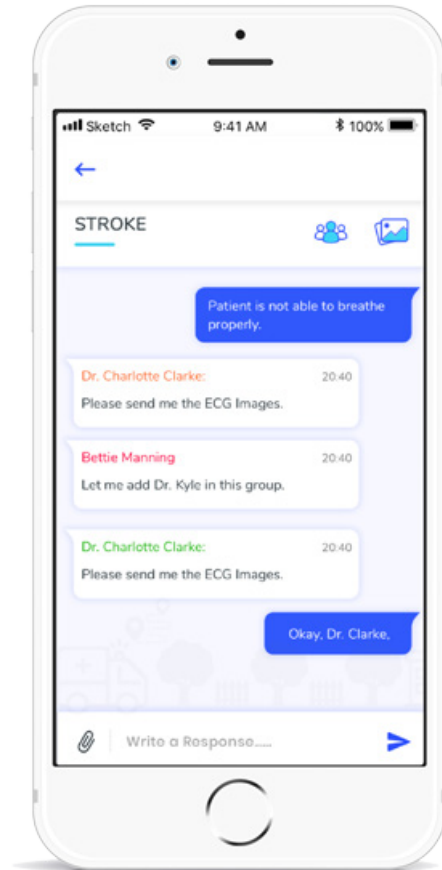
There are four primary roles based modules in the solution, Emergency Medical Services (EMS), charge nurse, business clerk and the doctor. Each module has access to information based on their role in the treatment of STEMI. For instance, the Emergency Medical Services (EMS)/ Paramedics module takes up the patient details such as patient's ID, disease type, onset time, symptoms and recommends a hospital. This info is then passed on to the charge nurse, business clerk, and the doctor of the respective hospital who can take further action to initiate the treatment at the earliest possible time. Depending upon the role, the patient healthcare information (PHI) is shared or hidden from the members.

Once a hospital and doctor is assigned, a group chat is initiated between the paramedics, charge nurse and doctor to understand the situation and medications needed to get started with the treatment. Most importantly, the involved stakeholders can track the ambulance in real-time on a google map and check the patient's estimated time of arrival (ETA) to the hospital.

The Charge Nurse can add or remove doctors, edit patient ID and discharge the patient. The Business Clerk receives and enters the patient details into the hospital's database. The Doctor assigned by charge nurse for treatment can add or remove other doctors as per the case requirement.

Impact

The solution aims to streamline the treatment process by ensuring that the right, on-time treatment is given to the patient once they arrive at the hospital. The solution has been implemented in 6 major hospitals across Canada, has been well received by the healthcare providers and has earned excellent feedback from the first users. The application also tracks the healthcare provider's performance compared to the standard benchmarks for quality improvement monitoring. There are also significant resource utilization advantages, Since physicians can rapidly review ECG findings, appropriate modifications to EMS and in-hospital STEMI activations can be made rapidly.
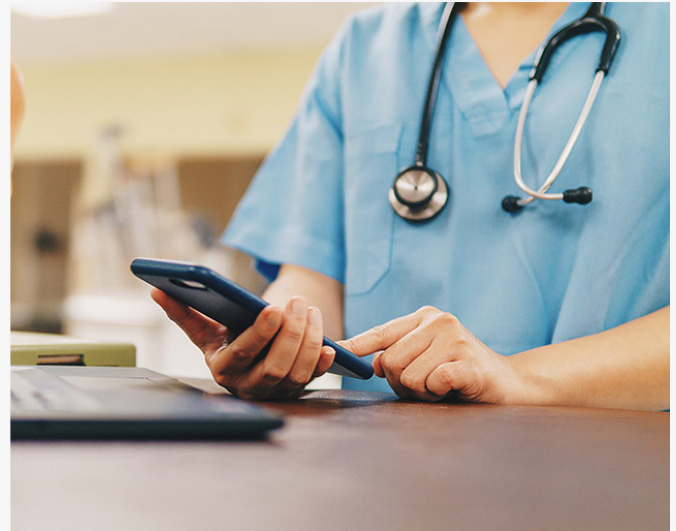
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Technology Stack
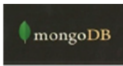
- React Native
- AngularJS v6
- Nodejs
- PostgreSQL

About Daffodil

Daffodil Software is a software engineering partner to 100+ organizations across the globe and has been helping them in making their software products more robust, teams more productive and processes more efficient. Our ability to look beyond technologies to deliver innovative solutions with scale and speed has been lauded by our clients as well as the tech community worldwide.

Since our inception, we have invested in organic growth; building on our engineering capabilities, organizational processes, and culture required to deliver a truly collaborative ecosystem for solving technology challenges. At the core of Daffodil lies a culture rooted in innovation, learning and a result-oriented mindset.

Deloitte. Technology Fast500 APAC Winner	**Clutch** FIRMS THAT DELIVER	**zinnov ZONES**	**Great Place To Work® Certified**
mongoDB MongoDB Innovation Award	IT Europa Finalist	**GoodFirms** TOP SOFTWARE DEVELOPMENT COMPANY goodfirms.co	
ISO 27001:2013	CERTIFIED **ISO** 9001:2015 COMPANY	International Organization for Standardization **ISO** 20000	

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