daffodil

Customer Success Story

Building a robust online certification and e-learning platform for pediatric dentistry

Customer: US based leading digital service provider

Country: United States

Industry: eLearning

Our Role: Software Engineering

About the Client

The client is one of the leading digital services providers, based in the United States. Founded in the year 1998, it has been providing its services in various domains, which includes web design & development, digital marketing, media production, managed hosting, and more. It has a proprietary online certification management solution, called Robust Online Certification-Program (ROC-P) which helps various organizations to manage pediatric dentistry certification.

10,000+	100+	57%	46%
online certifications issued	certification centers associated	reduction in TAT	increase in efficiency

The Situation:

American Board of Pediatric Dentistry (ABPD) is a certifying board for the specialty of pediatric dentistry. It is one of the nine specialty boards recognized by the American Dental Association. It has various certification programs that continually validate the knowledge, skills, and experience of a pediatric dentist to deliver quality care. ABPD had an online platform that would allow pediatric dentists to apply for various certifications, schedule offline/online exams, check the status of their certificates, etc.

The client partnered with the American Board of Pediatric Dentistry for creating an online certification management system. The vision was to develop a modernized version of the existing solution by ABPD. They envisaged a SaaS product which could further be used by various online certification providers in the pediatric dentistry domain.

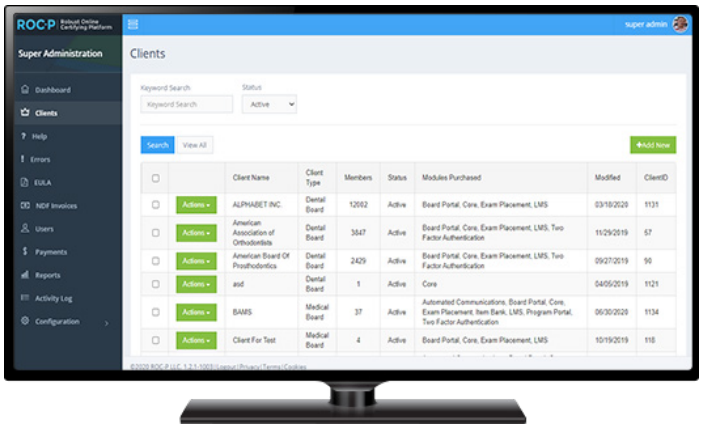
The client was on the lookout for an experienced software engineering partner with hands-on knowledge of the healthcare sector, and could take over operational knowledge of the ABPD. The requirement was to:

- Orchestrate a robust and scalable application architecture that could allow the client to concurrently train a large number of dentists without compromising on user experience.
- Automate the entire process of dentistry certification management that could enable applicants to apply for exams, make payments, download course materials, and lookup for certifications through an online portal.
- Develop a role based access system for roles such as super-admin, admin, applicant etc. with different permissions and data access, and enable managers to review results submitted by users, assess the assignments and provide feedback.
- Incorporate a two-way communication channel in the application that could allow applicants to interact with the admin for their queries or results.

The Solution

Team Daffodil started with a thorough assessment of the existing solution which was built on ASP.NET technology. Our business analysts, after multiple brainstorming sessions with the client, 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

Daffodil created an online certification management system that allows applicants for pediatric dentistry certification to apply for exams, make payments, keep a track of certifications availed/their validity, and more. The solution automates the process of applying for certifications and managing them for various online certification providers.



The solution is a software-as-a-service (SaaS) product that can be used by multiple organizations for managing its certification system for thousands of applicants. The role-based certification management system has three major roles:

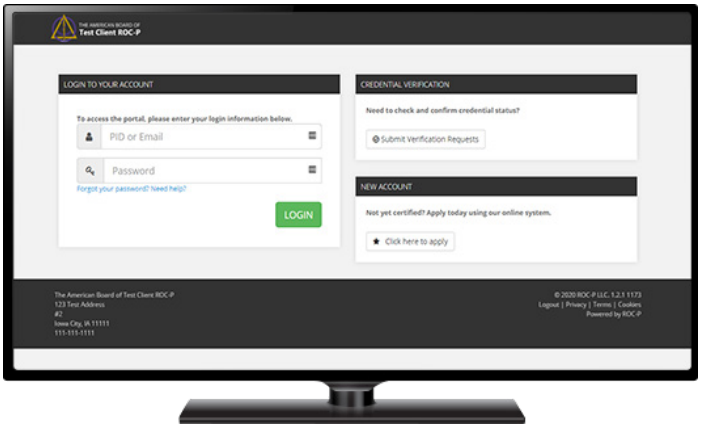
Super-Admin:

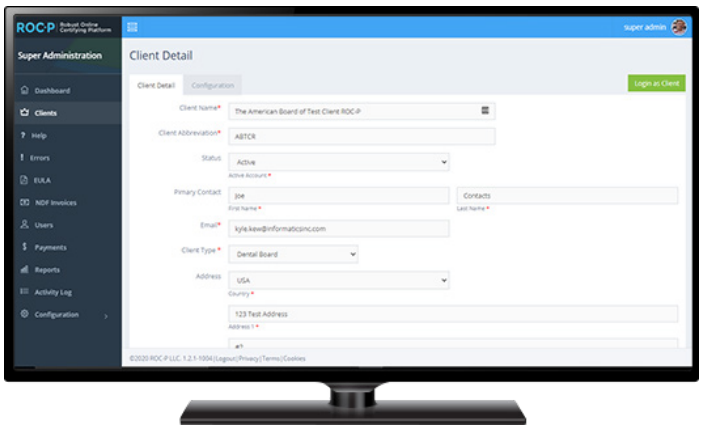
The super-admin has access to all the clients (online certification providers) who use the Robust Online Certification-Program (ROC-P) solution. The super admin can add new clients with details such as client type, the board they belong to (dental or medical), client status (active or inactive), add the address URL of their portal, payment gateway settings, general configuration, etc. The super-admin can also remove or update the client information, and add more super-admins to manage the system.

Client-Admin:

The client admin is an online certification provider who manages the exams, applicants, and certifications through different modules. The client can do the following using this portal:

Create a Question Bank: The admin can create a question bank for different exams for pediatric dentistry certification. He can define the question type (objective/ subjective), can set up the right answer to the question, the exam where the question can be assigned, add a file (image, PDF, Doc, etc.) related to the question, etc. This module has a versioning control system wherein the admin can check different versions of a question with details like which parameter in the question is changed (if it is the question text, file, or the distractor). Details of all the changes are maintained in a log.





To ensure security of the entire system and the question bank, the client-server communication was encrypted. This ensured that no critical information moved out of the system without unauthorized access.

Set-up Oral/Written Exams: The admin can set-up oral and written examinations. For setting up an oral clinical examination, it is important to ensure that there is no conflict between the examiner and the candidate. For this, team Daffodil defined an algorithm, based on various conditions provided by the client.

To eliminate the examiner-candidate conflict, SQL procedures with complex logic were written. Since the query had to check for numerous conditions during execution, it was important to ensure that the output is processed correctly and as fast as possible. To improve the algorithm, various brainstorming sessions were scheduled with the client where team Daffodil modified the flow/chart/conditions provided by the client and implemented them at the database level.

e-Learning Module: Custom course building modules to enable administrators to combine all the content elements such as text, video, images and practice questions to build rich and engaging courses.

Custom Learning Paths: Enables admin to restrict the way that courses can be completed or course content can be viewed.

Exam Results Display: The certification exams for pediatric dentistry can happen offline and online. If the exam happens offline, its results will be displayed on the portal as the exam is assessed. On the other hand, if the exam is happening online, the result is displayed as soon as the candidate submits the answer. However, in the case when the exam questions are subjective or are a mix of subjective & objective questions, the result is displayed on the portal when the answers are thoroughly assessed.

Communication Channel: Using Twilio, an email channel for communication is provided to the client admin for

Check Payments: The admin can check out payments received from candidates, can set payments as void, or refund them. The entire payment system is controlled by authorized.NET.

Applicant:

For the candidates to check out their certification details, there is a separate login provided to them by the client-admin. The candidates can check the requirements to avail or maintain a certificate, the certificates that they have, check for permissions to contribute to the exam bank (based on their certification and grades), past results history, etc.

Impact

Our technical leadership in defining project-level architecture, including design, infrastructure and data architecture, helped the client to launch a robust online certification system for the American Board of Pediatric Dentistry. The client has been extremely satisfied by the way Daffodil has executed their vision and have planned for further updates to the system. More than 10,000 certifications have been issued to the applications through the online system, including hundreds of certifications in the pipeline.

10,000+
online certifications issued

100+
certification centers associated

57%
reduction in TAT

46%
increase in efficiency

Technology Stack

- ASP.NET
- SQL Server
- Telerik control
- Twilio
- Authorize .NET

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

ISO 27001:2013

CERTIFIED ISO 9001:2015 COMPANY

International Organization for Standardization ISO 20000

GRANDVILLE, USA

2885, Sanford Ave SW
#28585, Grandville,
MI 49418 USA

GURGAON, INDIA

9th Floor, Tower B1,
DLF SEZ Silokhera,
Sector 30, Gurgaon
122001

DUBAI, UAE

Suite No.: 407- 412,
Clover Bay Tower,
Business Bay, Dubai
United Arab Emirates

HISAR, INDIA

6th Floor, Metropolis Mall,
Industrial Area, Hisar,
Haryana - 125005