# CASE STUDY

# Visitor Management System

## About the Company

Company is a leader that provides visitor management technology to over 12,000 K-12 schools and community facilities such as YMCAs. Their technology solution performs an instant sex offender background check against the registered sex offender databases in all 50 states for every visitor. The company holds a market share of 70% of the K-12 schools that have visitor management software. The software manages visitors, students, faculty and volunteer's entry and exit to the facility while also managing custodial issues. Every day at least 40 sex offenders are found and prevented entry to the school premises.

## Business Challenges

The current software was several years old, and used relatively outdated technology. The company wanted to build the next generation of their current product using latest technologies with improved user experience. Company has rapid growth plan of 50% every year and expects to have 50,000 customers in next 7 years. The new software system should be highly scalable to support this increased customer volume and at the same time with high performance.

The company wanted to expand to neighboring markets and needed the system to be usable across verticals like health care and corporates.

The company wanted to build the system and release to the market on a very aggressive timeline of few months.

## Solution

### SaaS solution for High Scalability and Performance

The software was designed to have a system and application databases. System database stores the subscriber detail, modules subscribed, payment history and other subscriber detail. Application specific data like student, staff, volunteer and visitor details are stored in application database for each client. Multiple clients can share the same application database or have different database. Our solution supports multiple application databases and web servers.

System database has information related to every subscriber's web server and application database. When a subscriber logs into the application their details are retrieved from the system database and the subscriber is routed to the appropriate database and web server combination.

### Technology Stack

- ✓ .NET Framework 4.5, C#, ASP.NET
- ✓ MVC 5, Bootstrap, AJAX, jQuery
- ✓ Telerik RAD Controls (Reports)
- ✓ Twilio, SendGrid (Messaging)
- ✓ Azure (Cloud), NPOI (Import)
- ✓ IIS 8.0
- ✓ SQL Server 2012
- ✓ Re-Sharper (Code Cleanup)
- ✓ Visual Studio 2013, TFS

The architecture allows application to scale horizontally based on runtime usage and demand. The tenant based horizontal partitioning allows flexible scaling options (horizontal and vertical) to maintain the desired application performance. The architecture also ensured ease of operations and system administration.

## Cloud Deployment

System was built and deployed on Microsoft Azure cloud in such a way that the server/service resources were added and removed based on the demand throughout the day. This helped the company provide high performance throughput for visitor screening and meet SLA commitments. A cloud deployment also reduced the management overhead of maintaining server environment.

## Support across verticals

System uses the Entity Attribute Value (EAV) pattern. This allowed the customers to define the attributes and entities as per their need thus ensuring the system is customizable, flexible and expandable across verticals.

## Rapid and Transparent development

Trigent followed Scrum methodology for development with 3-week sprint cycles. Product owner prioritized the product backlog items and provided detailed user stories for Sprint planning. During Sprint planning the scrum team derived the Sprint backlog, Sprint Goal and a detail plan. Sprint progress was reviewed during the daily scrum and appropriate adjustments were made to meet the Sprint Goal. End of the Sprint, Sprint reviews were performed where the features were demonstrated and feedback collated. End of the Sprint, the scrum team meet for retrospect to identify the positives and negatives and identified corrections to the process.

## Prominent Features

- ❑ User authentication and authorization
- ❑ Visitor, student, staff and volunteer management
- ❑ Visitor sign in/out by front desk person or automated Kiosk
- ❑ Sign-in by scanning over 50 valid type of identification cards
- ❑ Sex offender check for all visitors and volunteers. Instant notification on match.
- ❑ Student sign in/out and tardy management
- ❑ Staff sign in/out management
- ❑ Import of student and staff from csv, Excel sheets
- ❑ Client and building specific customization
- ❑ Volunteer approval workflow process
- ❑ Integration with Dymo printers and Scanshell scanner
- ❑ Multi-language support
- ❑ Dashboard and Reporting

## Benefits

SaaS architecture, efficient database operations and cloud deployment ensured that the application is highly scalable and performed better than the existing system.

EAV pattern helped to market and sell the system to different verticals with minimal software changes.

Using the Scrum development methodology Trigent was able to deliver a minimum viable product within 7 months as desired at the start of the project.