Case Study
Application Development for Interactive Exhibits

Client:
A non-profit museum and cultural center
The client is a non-profit museum and cultural center in Louisville, Kentucky. Dedicated to a hometown hero, it is located in the city’s West Main District. The six-story, 96,750-square-foot museum also includes a 40,000-square-foot, two-level amphitheater and a plaza. The cultural center features exhibitions of the hero’s life and values.

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<td>Client building multiple exhibits that require custom interactive software and custom management system.</td>
<td>• Mix of technology including HTML5 / CSS3, Microsoft MVC .NET, and Microsoft WebAPI RESTful service.</td>
<td>• Holistic content management system that supports separate interactive exhibits.</td>
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<td>Client working under four-month deadline and must adhere to regulations including Children’s Online Privacy Protection Rule.</td>
<td>• CBTS resources to design and implement separate interactive exhibits using the technologies.</td>
<td>• Project delivered on time, on budget, and in accordance with relevant regulations.</td>
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Business Challenge

In April 2016, the CBTS Application Solutions team met with the client to discuss client’s need for custom interactive software to support a new exhibit that was opening in four months.

Client needed software that would provide visitors a deeply immersive experience; support a heavy volume of users; and provide the client’s staff with the necessary infrastructure to easily manage and update the exhibits.

Some of the key technical challenges and needs included:

- Fluid touch-screen interaction
- Use of standard programming techniques and tools
- 4K display / touch-screen interaction for a Timeline exhibit
- High-definition video capturing the Story Station exhibit booths
- A custom Content Management System (CMS) that will allow the client to maintain database-driven content and approve videos prior to public release
- Children’s Online Privacy Protection Rule (COPPA) compliance to protect content created by visitors under the age of 13
- Infrastructure to support heavy interactive use among high volume of customers

CBTS Solution

CBTS leveraged the following technologies to accomplish the client’s objectives on budget and on time:

- Each workstation runs as a dedicated Central Processing Unit (CPU) using the Windows 10 operating system and solid state drives.
- For the front-end technology, all exhibits were developed in HTML5 / CSS3 using various JavaScript frameworks and libraries to handle the desired interactions.
- For the back-end technology, a Microsoft WebAPI RESTful service handles all exhibits’ interaction with the database, video uploads, notifications, and cloud-based content sync with the local CPUs.
- The custom Content Management System (CMS) was developed in Microsoft MVC .NET and is hosted in the cloud.
- The database server is the Microsoft SQL Server, also hosted in the cloud for ease of scaling in / out based on demand.
- Microsoft SendGrid provides the platform for automated emails to visitors.
- Google Chrome is the dedicated browser to run the HTML5 software and provides the necessary support for experimental video interaction with high-definition camera devices and full kiosk control.
Results

Three separate interactive exhibits were developed for the client:

- **The Timeline**
  - 75" 4k multi-touch display
  - Database-driven historical events
  - Visitor can swipe through the years, touch a specific year for more information, and interact with the multiple events for that given year through videos and other content

- **Humanitarian Awards**
  - Two 32" high-definition, multi-touch display monitors
  - Database-driven interactive tabs for each annual Humanitarian Awards event
  - Visitors can learn the history behind the awards and also watch all videos of the ceremonies for any given year, including performances and inspiring videos on award recipients.

- **Story Stations**
  - Five 32" high-definition, multi-touch display monitors, plus 1080p high-definition cameras and sound isolated microphones
  - Visitors create and watch inspirational videos of themselves and other visitors
  - This interactive experience allows up to 3 visitors in one booth to share their experiences with the world