

Case Study

St George's Hall Charitable Trust

Background

St George's Hall is a Grade I listed building in Liverpool, opened in 1854 and standing gracefully in the city's historic cultural centre. This neoclassical architectural gem attracts thousands of visitors to the city every year through tourism, corporate events, and weddings. It features in numerous blockbuster films and famous TV shows, including *Peaky Blinders*, *Batman* and *Harry Potter's Fantastic Beasts*.

At the centre of the building is the magnificent Great Hall. Spanning an impressive 169 feet in length and 74 feet in width, the Great Hall boasts a stunning barrel-vaulted ceiling and an intricate Victorian mosaic flooring of over 30,000 handmade Minton tiles. Inspired by the ancient Roman baths of Caracalla, it is one of the largest Minton floors in the world and features symbols capturing Liverpool's maritime heritage and civic aspirations. Visitors can also admire the Great Hall's grand organ, one of the largest in the UK, surrounded by exquisite sculptures and detailed plasterwork.

Challenge

In an ambitious project to transform visitor experiences, the St George's Hall Charitable Trust embarked on a groundbreaking initiative to blend digital innovation with heritage preservation. This project has been designed to enhance both, tourism and educational engagement by creating a new digital visitor experience centred around the beautiful Great Hall and showcasing significant elements of Liverpool's rich history.

Delivery Partner

VEC

Solution

Following an ongoing relationship with the team of digital engineers and specialists at the VEC (Virtual Engineering Centre), the Trust invited the team of specialist engineers to undertake several scans of the Great Hall. These results could then be overlaid on top of existing scans of the famous Minton Tiles, the VEC had captured just a few years earlier. These high-resolution digital replicas of the Minton Tile Floor allow visitors to experience its beauty virtually. Originally covered over in 1860 (to allow for dancing in the Hall), the hand-crafted tiles are highly fragile and are normally hidden from view by a protective floor that is removed only every 2-3 years for short viewing periods by the general public.

Utilising state-of-the-art scanning technology such as LIDAR, high-spec 360 cameras and specific drones, the VEC captured extremely detailed images of the Great Hall, including its stunning walls and ceiling. This comprehensive digital archive ensures an accurate and immersive representation of the space. The scanning procedure has enabled the VEC team to capture intricate details of the Hall, statues, images within the glass windows and other details, otherwise difficult to view from the ground.

The Trust, working alongside St George's Hall operational team from Liverpool City Council (the building's owner on behalf of the people of Liverpool), envisaged a digital exhibit based on a touch-screen interface within the Great Hall to enable visitors to interact with digital twins of the statues and other artefacts. Through the interface, visitors could engage with detailed information about different elements of the Hall to enhance understanding and appreciation of the building, Liverpool's history and the evolution of building and city since 1854.

Building on this initial concept, a multi-use immersive experience has been developed. It allows visitors to instantly access information through digital overlays or interact with AI-driven digital statues, enriching educational experiences while preserving the authenticity of the space. Additionally, proof-of-concept lighting and virtual image projection have demonstrated the medium's ability to digitally plan events, offering enhanced insight into the space's structure and its interplay with light, colour, and movement.

Before the physical implementation, the team conducted tests in a virtual environment using a new proof of concept. This approach minimised risks and streamlined the integration process, ensuring a smooth transition from digital to physical execution.

Furthermore, the integration of metahuman technology added a dynamic and engaging layer to the visitor experience. Following the VEC's previous work with the St George's Hall Trust, demonstrating the power of AI and Metahumans for historic storytelling, the VEC engineers created an interactive model of Sir Robert Peel, a two-time Prime Minister of the United Kingdom in the 19th Century, regarded as the founder of modern British policing and one of the popular statues standing within the Great Hall. Using this model, visitors can ask Robert about his life, and his significance within history, creating an engaging and educational experience for visitors.



Impact

By combining previous digital work, this project created a cohesive and impactful narrative that resonates with diverse audiences, whilst enriching accessibility for a wider audience. By overlaying the scans, St George's Hall now has two different timed data stamps, which can support their library of information and data surrounding the historic building.

The digital visitor experience has the potential to transform how visitors interact with Liverpool's historical stories. By combining digital and physical worlds, the project preserves fragile artefacts and offers an engaging and educational exhibit that should resonate with tourists and local communities. This initiative will set a new standard for heritage preservation and digital innovation across the city region, showcasing the potential of technology to enhance cultural appreciation and learning.

St George's Hall can also utilise the digital twin of the Great Hall as a virtual environment demonstrator that can be promoted to a diverse range of audiences and users. For example, event organisers could use the digital twin to plan how the space can be used, or film producers can experiment with different lighting, camera angles, and movement of actors prior to physical location shoots and draw on the virtual environment in post-production editing. The digital twin can also enable groups to interactively explore the Great Hall remotely, encouraging future buy-in to the Hall.

The VEC produced and created a number of these digital assets through different platforms and systems including point cloud and 3D Mesh, enabling St George's Hall to hold a library of assets, for ease of future use.