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# LIDAR news

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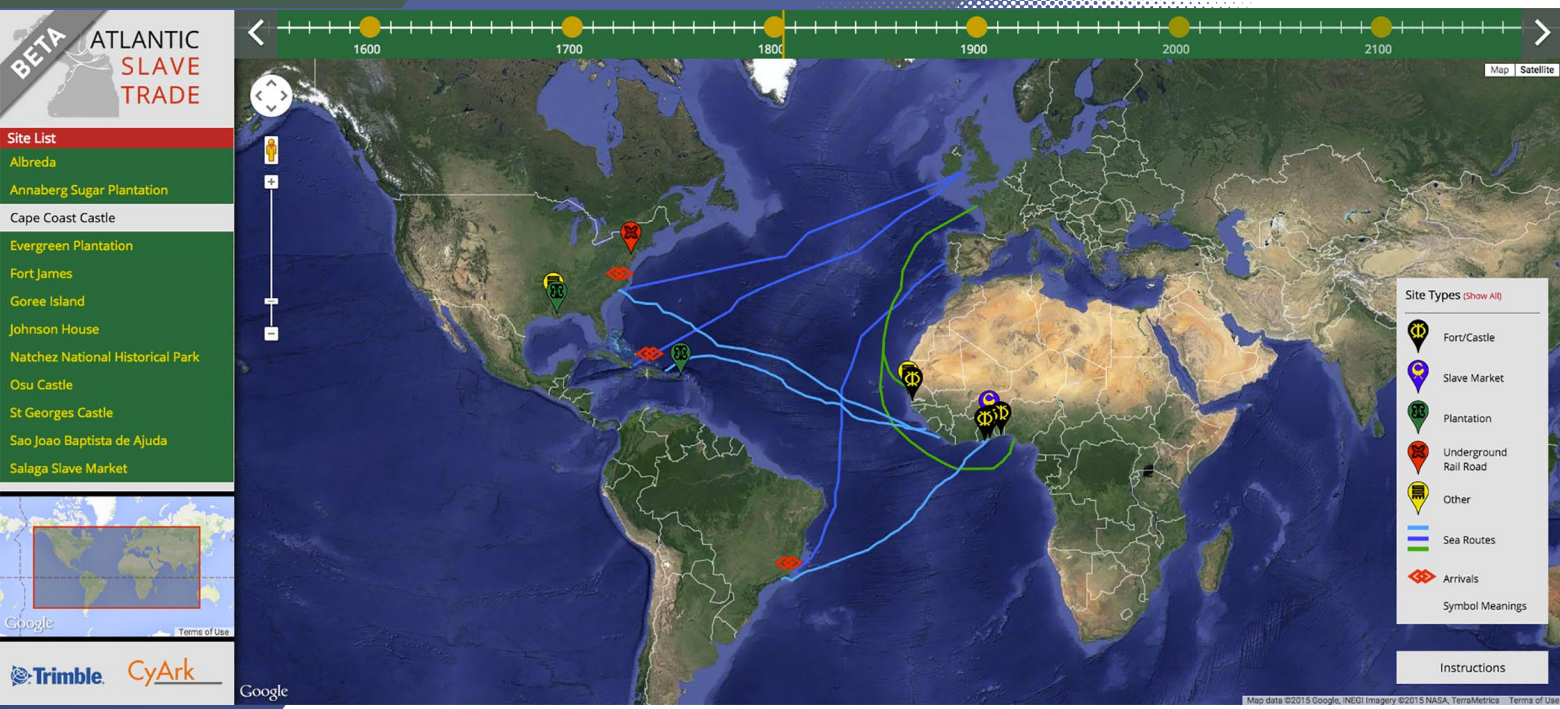



An interactive map showing some of the Atlantic Slave Trade routes and sites is the starting point for exploring Natchez and future proposed sites. You can view it at cyark.org/themes/atlantic-slave-trade.

# Documenting the Trans-Atlantic Slave Trade

## Using 3D Technologies to Understand Diverse Historical Landscapes

In the fall of 2014, CyArk and Trimble embarked on a joint program to preserve a series of sites across western Africa and the Americas in order to shed further light on the physical remains of sites associated with the extensive and exploitative Trans-Atlantic slave trade. CyArk, a California-based nonprofit dedicated to the digital preservation of the world's cultural heritage sites, and Trimble, a leader in the field of positioning technologies, kicked off their partnership through the digital preservation of Natchez National Historical Park in Natchez, Mississippi.

BY KATIA **CHATERJI** AND ALLYSON **MCDUFFIE**

In September of 2014, CyArk and Trimble kicked off their joint program at Natchez National Historical Park in Natchez, Mississippi. This photograph shows the back facade of the Melrose mansion, a Greek Revival estate home, and the side buildings that contained the kitchen and dairy processing rooms on the lower levels, and slave quarters above.

Professionals from Navigation Electronics, Inc. (NEI) helped capture the sites at Natchez along with the CyArk and Trimble teams. The project in Natchez will soon be joined by a handful of other surviving sites related to the Trans-Atlantic slave trade, creating a theme of digital preservation projects that complement the continued study, research, and conversation around slavery in the Atlantic World. This project builds on the pioneering work of University of Cape Town's Professor Heinz Ruther and the Zamani Project to document the heritage of Africa, as well as the work of the Voyages Database and other scholars in the field.

In curating an interactive, immersive experience around these sites, the latest 3D laser scanning technologies will be engaged. These sites will be linked via an interactive map interface, to visually demonstrate the forced migration of approximately 10-12 million people to the western hemisphere. This intuitive and unique web application will allow users to interact with information through a timeline of the slave trade, including historic maritime routes and ports of landing.

The initial goal of this project is to digitally preserve 10 heritage sites across Africa and the Americas, with Natchez National Historical Park as the first project to be documented. Resting along

The CyArk and Trimble team used Trimble scanners to document the structures at Natchez National Historical Park. This photograph shows the documentation team in front of the William Johnson House, now a museum that is part of the park.

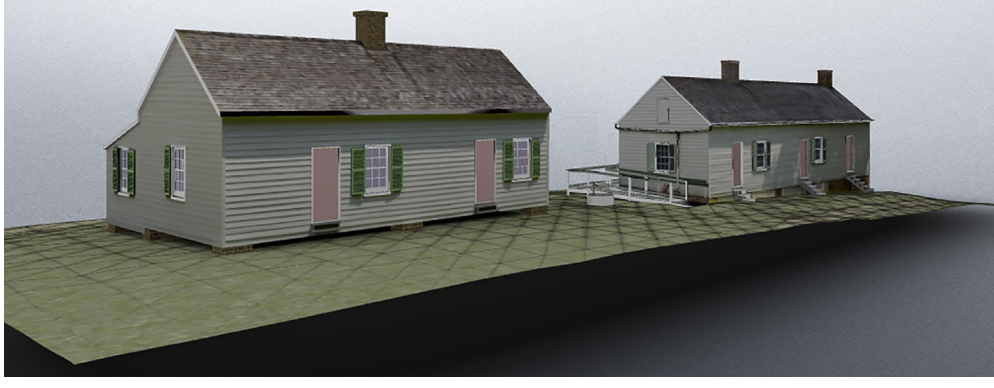
Robert, with the NEI team, captures data of the slave quarters at Melrose.

the Mississippi River, the city of Natchez played a significant role in the landscape of slavery in America. Prior to 1863, Natchez was home to the second largest slave auction site in the country, with traders transporting tens of thousands of enslaved people from Virginia, Maryland, the Carolinas, and Kentucky to the markets and auction sites of New Orleans and Natchez.

The Natchez National Historical Park also includes two prominent historical residences: the William Johnson House, an iconic brick house that provides valuable insight into the less documented experiences of the free black community living in Natchez in the early 1800s; and the Melrose House, a Greek Revival estate home that allows for a closer understanding of the daily life of those enslaved. The history of this city alone and its representational architecture make it a compelling candidate for digital preservation, and the field capture served as a pilot project for a broader theme addressing the Trans-Atlantic slave trade.

On site at Natchez, Trimble TX8 and TX5 scanners were used to document the Johnson and the Melrose Houses, as well as 4 slave quarters on the Melrose Estate property. In addition to 3D laser scanning, GIS survey data and panoramas were collected using the Trimble V10. In a total of three days, the field capture team scanned and surveyed the interior and exterior of both houses in completion, along with their surrounding contexts. During this time, the field team also captured high-resolution photography and conducted interviews with Kathleen Jenkins, the Park Superintendent, as well as Park managers, volunteers, Natchez experts, and prominent figures at the Natchez Museum of African Art and Heritage.

While the field capture of the Natchez National Historical Park allows for a baseline for documentation at the site, derivatives from the data make it possible for the public to interact with the site in new ways. With a virtual tour of both the Johnson and the Melrose Houses, visitors can explore the sites through panoramic photography. A detailed 3D model, created from the panoramic imagery



A 3D model of the Melrose slave quarters was created using Trimble SketchUp, and is now available on CyArk's website for visitors to explore.

An interior room of the William Johnson House, captured with the TX8 scanner, and displayed here as a 3D color point cloud.

using Trimble SketchUp, is also available on the CyArk website to introduce web tourists to the style, structure, and geographic location of the slave quarters at the Melrose House.

In addition to contributing to the ongoing narrative of the complex Trans-Atlantic slave trade system, this digital preservation theme of projects will create free public access and standards-based curriculum around individual sites and the global slave trade at large. The documentation at each site will be made possible through leveraging Trimble and CyArk partnerships around the world to create broader access and understanding around an immense historical time period, building technical capacity and student engagement in field capture on a project basis.

Documentation and inclusion in the Digital Preservation of the Atlantic Slave Trade theme will greatly enhance visibility at these sites, while bringing cutting edge technologies to assist in site conservation and interpretation. A major goal of this theme is to fundraise on a project basis to enable sites that may not have the resources for documentation to still benefit greatly from technology advancement and promotion.

Trimble and CyArk are seeking partners to build upon their initial progress to realize the larger program of digital preservation of the many diverse sites and stories of the Trans-Atlantic Slave Trade. Academic support, consultation, heritage site participation, and funding are all needed to achieve the broader project. Interested partners can contact Katia Chaterji at CyArk (katia.chaterji@cyark.org) or Allyson McDuffie at Trimble (allyson@sketchup.com).

**Katia Chaterji** is Project Coordinator at nonprofit CyArk.

**Allyson McDuffie** is SketchUp for Education Global Program Manager at Trimble Navigation.

A color 3D point cloud model of the William Johnson House was captured by a Trimble TX8 scanner, and processed in Trimble Realworks.