

AUTODESK & THE MODELING OF THE U.S. AIR FORCE ACADEMY CADET CHAPEL



The U.S. Air Force Academy's Cadet Chapel in Colorado Springs, Colorado was digitally modeled by Autodesk in 2014. This building, completed in 1962, is an iconic and sacred place for the Air Force community. However, the structure needs renovation: there is water leakage, heating and cooling issues, and other structural problems. The Air Force consulted Autodesk to capture the existing as-built conditions in order to better understand the current condition of the structure and to accurately estimate the time and cost of the repairs. Autodesk leveraged building performance analysis tools within the project to demonstrate to the Air Force, one of the largest consumers of energy worldwide, how to potentially mitigate some of their energy costs not only at the Chapel but also Department-wide.

Capture Phase



The scanning of the Chapel began with 129 laser, or **LiDAR**, scans inside and outside of the structure.



Measurements were made using unmanned UAVs, or **drones**, which took 1,232 pictures of the outside of the Chapel.



Autodesk completed scans at **3 levels** of the Chapel- the Terrace Level, Protestant Level, and the rafters.

Compute Phase



Compiled **VSA data** which allows the modeler and building owner to Visualize, Simulate, and Analyze the existing conditions and make informed decisions about the future of the structure.



Built an intelligent **3D model** in Revit, enabling unmatched visualization and simulation possibilities downstream.



Reality capture data was inserted into **Revit**, Autodesk's Building Information Model (BIM) authoring platform, providing an accurate reference for model creation.

Create Phase



These models can be used to make predictions **saving time, ("4D")**, by validating adjustments to the structure virtually prior to executing on site.



Cost predictions, ("5D"), can be performed, like Lighting Analysis for Revit that provides detailed daylight and electrical light simulations visualized directly in the model.



Autodesk can show results of changes to the Chapel in **real time** by running different tests on these models.



Thanks to these models, the U.S. Air Force is now empowered to make very informed, economically viable decisions in real time. These decisions will help the Air Force to save money and time during the repairs.

Presented by:



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Source: Pete Kelsey, Autodesk

http://inthe-fold.autodesk.com/in_the_fold/2014/07/the-united-states-air-force-academy-chapel-has-been-captured-dont-worry-thats-a-good-thing.html