The hardware and software system for digitizing the shape and color of large fragile objects under non-laboratory conditions. The system employs laser triangulation rangefinders, laser time-of-flight rangefinders, digital still cameras, and a suite of software for acquiring aligning, merging, and viewing scanned data. As a demonstration of this system, we digitized 10 statues by Michelangelo, including the well-known figure of David, two building interiors, and all 1,163 extant fragments of the Forma Urbis Romae, a giant marble map of ancient Rome. Our largest single dataset is of the David - 2 billion polygons and 7,000 color images. In this paper, we discuss the challenges we faced in building this system, the solutions we employed, and the lessons we learned. We focus in particular on the unusual design of our laser triangulation scanner and on the algorithms and software we developed for handling very large scanned models.