Rapid Orthophoto Development System

PI: Charles K. Toth, **Co-PI:** Dorota A. Grejner-Brzezinska
Sponsor: Ohio Department of Transportation (ODOT)
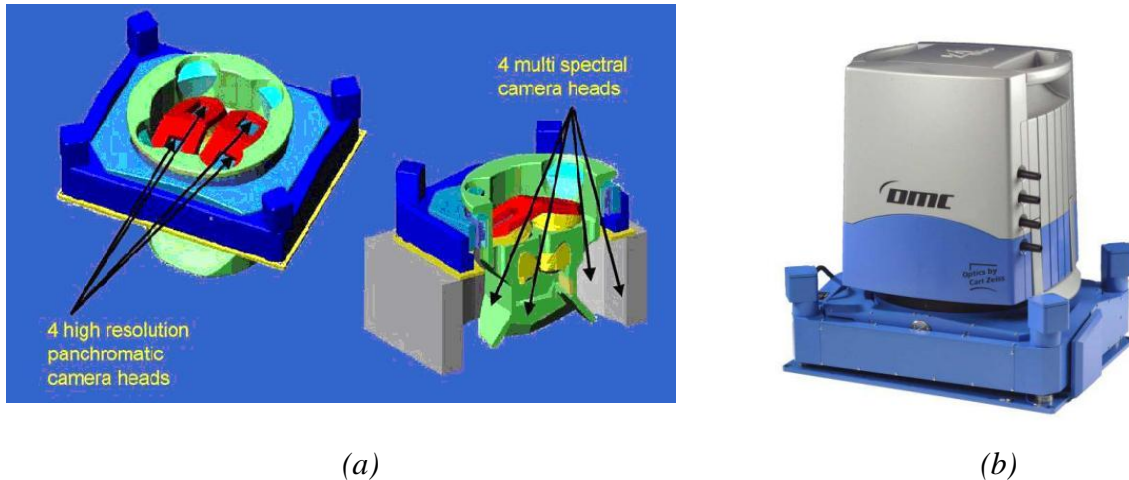
(a)   *(b)*

Figure 1. *Optical concept of eight-head DMC configuration (a), and DMC camera housing (b).*

In recent years, orthophoto products have become the standard for almost any mapping deliverables. Their phenomenal success is due to the fact that they combine mapping performance with image representation. In other words, an orthoimage has the map scale and orientation, as well as accuracy attributes of a conventional map, but instead of cartographic symbols, it uses images to describe the object space. In fact, orthophotos are so popular, that there is hardly any mapping product in current practice that would not come, at least, with a basic ortho background image. For example, most GIS and conventional vector data are customarily supplemented with an ortho layer, which provides a tremendous help for professional as well as novice users. Similarly, LiDAR data, the predominant technology for terrain surface extraction, are also frequently complemented with a basic background ortho image, which tremendously aids most of the data interpretation, since LiDAR data lack the visual information.

The ultimate objective of the proposed research is to introduce to the OAE an entirely digital map production technology, which will primarily serve the growing needs of the OAE clientele for rapid orthophoto products, but additionally, it will enhance the general mapping capabilities within OAE. The totally digital design is a precondition for achieving the secondary objective of the research effort, the competence in delivering ortho products in a timely manner, which is defined in hours compared to weeks, which is the current practice in the OAE. The entirely digital mapping system will allow for 1) the elimination of time-consuming and labor-intensive tasks that are associated with analog system components, 2) fast data transfer between the major processing units, and 3) high level automation of various processes, all needed to achieve an efficient orthophoto production.