

Cost Of Digital Image Sources For Map Revision: Comparative Analysis

Maha A. Jaafar, Ph.D.

ZMD Reining, Inc.

8413 Excelsior Dr. #200

Madison, WI 53717, USA

Phone: (608) 274-1987 Ext: 465, Fax: (608) 274-1804, Email: mahaj@reining.com

The transition from film-based mapping operations into all-digital, softcopy production is an evident technological advancement in mapping and map revision. Mapping agencies facing this transition have already invested considerable film-based resources, including stereoplotting equipment, photographic laboratories, and operator training. It is thus understandable why the hesitance in making the decision to embrace the new technology, as it requires substantial capital investment in resources. However, the transition must not be evaluated in terms of the immediate cost effectiveness, but also in terms of the possibilities that it will bring about. Another factor is that softcopy mapping requires digital imagery as the primary input data. The task then is to identify the most cost-effective source of input data. Digital imagery can be acquired directly in digital mode, such as in digital frame cameras and array scanners. The more common approach thus far, however, is through conversion from film photography using precision scanning systems. It is currently the most common source for imagery in photogrammetric mapping. While specialized commercial scanning services are now widely available, many mapping agencies opted to establish own in-house scanning capability.

In this paper, the economics of image acquisition alternatives for digital mapping production is examined. This is achieved by, first, examining the viability of direct acquisition technologies including digital frame cameras and satellite scanners. The cost of directly acquired digital imagery is also compared with conventional aerial photography of similar ground resolution and coverage area. Then, assuming the selected source is scanned aerial photography, the paper then presents a methodology for estimating the cost required for various scanning workloads. Based on the resulting estimates, the economic potential of establishing in-house scanning capability is tested using typical cost and benefit analysis. Its profitability is tested against outsourcing of scanning needs, to determine whether scanning technology is a commercially viable alternative worthy of investment in terms of needed capital and future returns.

The presented analyses are based on variables used from typical production requirements. However, the accuracy of future cash flows, and the cost of scanning systems, both are key to the validity of analysis recommendations.