

## CARTOGRAPHY FOR CONSUMERS: MEETING NEW DEMANDS WITH DIGITAL TECHNOLOGY

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The decade of the 1990's has radically changed the way maps are made, packaged, distributed, viewed, reproduced, and updated. Although unaware of the evolution, today's map readers are reaping the benefits of automated cartography. The entire range of map products consumers can purchase, from paper maps to traditional atlases to multimedia products, has been affected by the availability of computer-based map production systems and digital geographic databases.

From the perspective of commercial cartography, these changes are largely positive but they require re-evaluation of product viability and market assumptions. Key changes include:

- Decreased product lifetime for maps in all media.
- Increased demand for supplemental maps in guidebooks, textbooks, reference books,
- Increased demand for "special effects" (color, shaded relief, animation, perspective views, multiple languages,
- More content at lower price points,
- Higher expectations for content accuracy and currency,
- Increased demand for maps and atlases targeted to special audiences.

This paper will profile current map and atlas products in a variety of media to identify underlying changes in the industry.

Increased flexibility in both design and content has been the primary driving force in automation, allowing map publishers to re-use and adapt geographic data to match multiple requirements for content, coverage, scale, and "look" without re-creating each feature multiple times. As a result, commercial firms with the ability to invest in technology and labor can offer consumers far more variety than traditional producers.

Successful multimedia products for consumers require large investments in content, interfaces, and overall product development - often \$500,000 and higher. As a result, it is difficult for even the largest commercial map publishers to justify multimedia title development. By focusing on providing content, rather than authoring, publishing, and marketing, smaller players like commercial mapping firms can venture into this emerging market without extraordinary risks or costs.

The availability of intelligent digital geographic data from government sources has fueled a host of consumer products with enormous information content. Low cost government data introduces unfortunate competition, reducing incentives for private data producers. The recent increase of data-based products in the marketplace has proven that the downward trend in data value is offset by enhanced opportunities in value-added consumer products..

Electronic products give new life to traditional maps through interactive interfaces, terrain modeling, animation, sound, and other multi-dimensional tools employed in computer-based map design. The ability to create these images requires access to specialized software and production techniques. It is now rare to find an atlas without extensive digitally-created terrain shading, and even the simplest CD-ROM maps have "hotspots" as interactive gateways to additional information.

The prospects for digitally literate commercial cartographers are positive for the future as long as product engineering and marketing risks are closely controlled. And regardless of the market winner, consumers will benefit from greater access to quality map products at favorable prices.

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