

# Integrating Visual Analytics Tools into Geomarketing

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In recent years, following the developments in interaction devices and graphical user interfaces (GUIs), the interest in Visual Analytics (VA) has significantly grown. However, Geomarketing problems are still been solved through automated data analysis, independent from visualization and interaction techniques.

The introduction of visual data exploration methods into the field, could lead to more efficient analyses and better conveyance of their results.

## PROBLEM STATEMENT

Traditional market research companies currently use GIS software to conduct their geomarketing studies [1], which offers very powerful analytic processing power but provides very limited visual feedback until the final outcome. This final outcome is customarily presented to the client as a report containing thematic maps. Considering the target audience of geomarketing reports are marketing domain experts, thematic maps and their high level of abstraction (conceived for a broad audience) might not be the best channel for the cartographic communication of these results.

## VISUAL ANALYTICS

Visual Analytics is the “tight coupling of automated and visual analysis through interaction” [2].

Currently, from the proposed visual analytics process (Fig.1) only the automated data analysis path (green) is being used in Geomarketing.

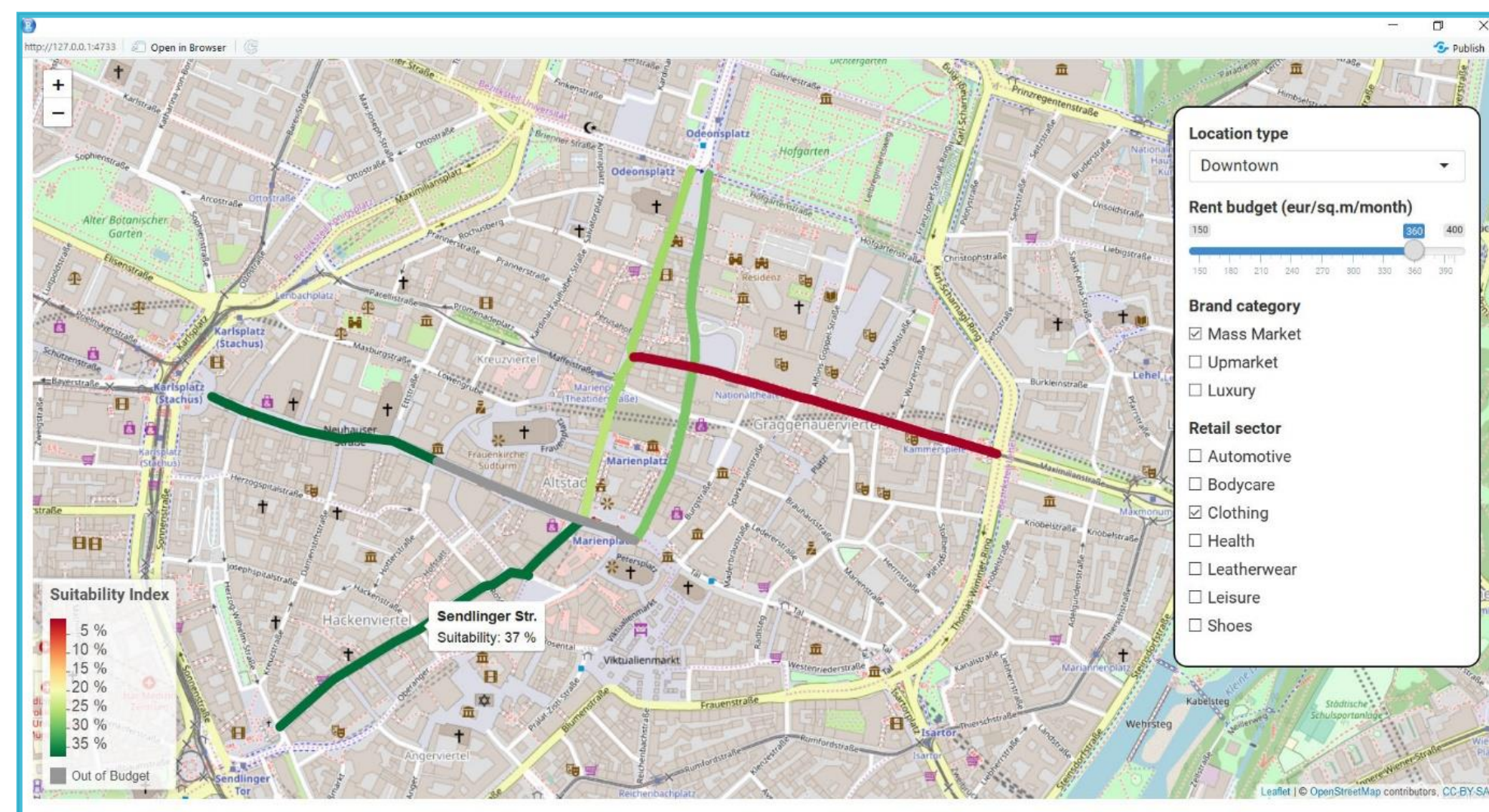


Fig.2: Screenshot of the designed pilot application

## CASE STUDY

To evaluate the feasibility of applying the entire VA workflow for solving a Geomarketing task, an interactive cartographic tool was designed focusing on enabling visual data exploration (red).

## USE

The tool was designed to solve the “Site planning” geomarketing task, which focuses on finding the best possible location to set up a new branch based on present and predicted future parameters.

## DESIGN

The tool’s features focused on human-interaction facilitating elements for the city-level location analysis. The two main components are a central dynamic map and the interactive options on the right side (Fig.2).

## IMPLEMENTATION

The implementation was made in R, a programming language specifically built for statistical treatment [3], using Shiny, a web framework for building interactive applications [4].

The strengths of these two perfectly match the paths of the visual analytics process.

## EVALUATION

Since the application is meant to be used by a selected group of experts, its testing was mainly based on participant observation and semi-structured interviewing of a geomarketing professional.

The user successfully responded to the provided tasks and displayed high degree of confidence.

## CONCLUSION

This thesis aimed to determine whether geomarketing professionals would benefit from the introduction of VA techniques into their workflow. To do so, an interactive Site Planning application was developed and tested.

The testing returned very positive results since the introduction of interactivity and live-feedback simplified the geomarketing analysis without limiting exploration. This way, the demo tool showed great potential as a versatile solution allowing users with no cartographic expertise to visually explore the multiple geographic implications of marketing factors.

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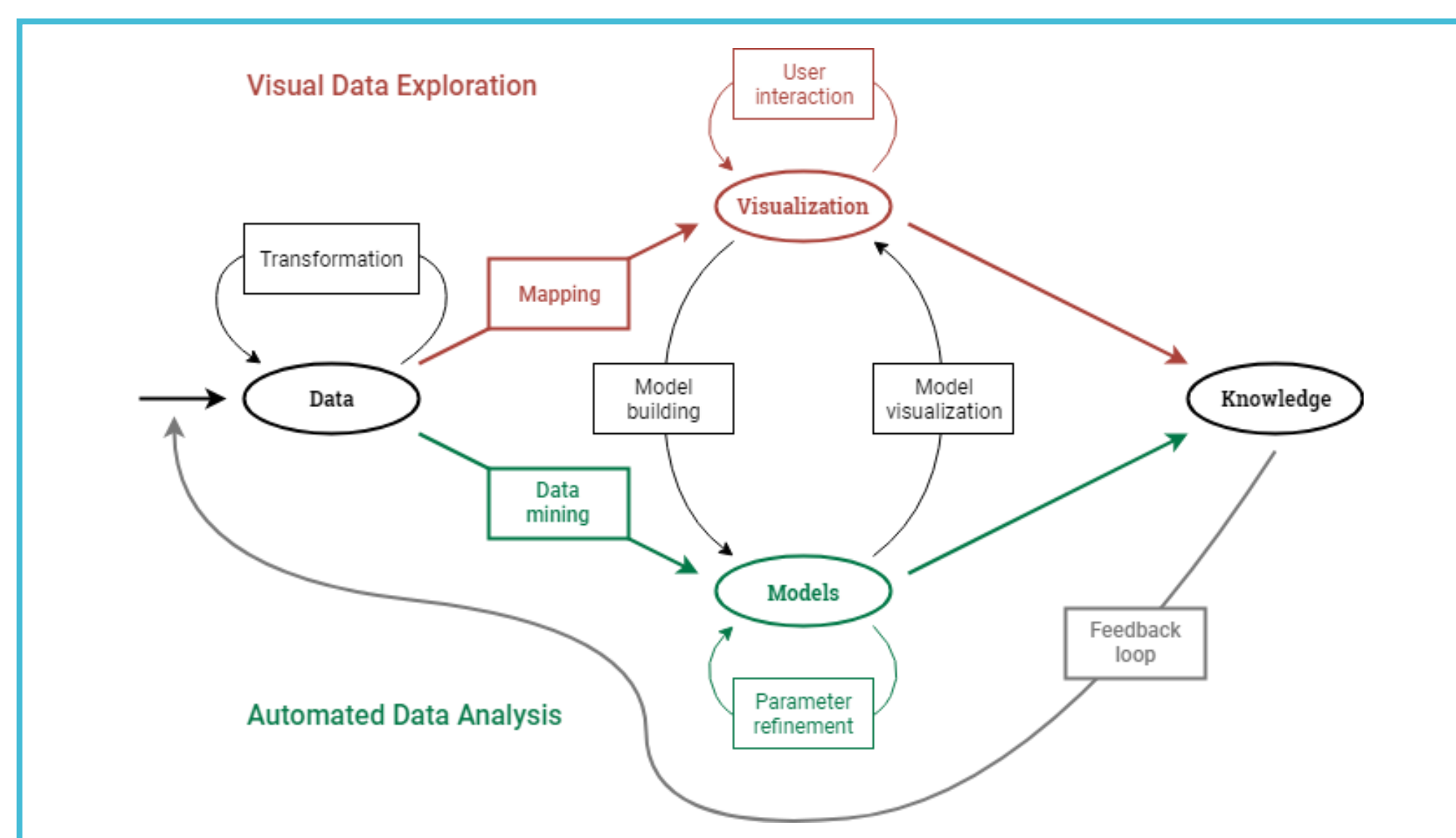


Fig.1: The visual analytics process. Figure redrawn from Keim (2010)

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