

# VACCINE

Visual Analytics for Command, Control, and Interoperability Environments  
A U.S. Department of Homeland Security Center of Excellence

## MarketAnalyzer

### Visual Analytics System For Business Intelligence

**Benefit:** Our MarketAnalyzer technology provides analysts with a suite of visual analytic tools for spatio-temporal exploration of multivariate point of sales data sets in the linked pixel-based matrix view, line graph view and stacked-bar view. These tools provide advanced analysis and awareness capabilities for discovering and analyzing competitive advantages in markets.

#### Mission Need

Competitive intelligence (CI) is the process of ensuring competitiveness of a company in the marketplace through a greater understanding of your competitors and the over all competitive environment. CI is gaining popularity but there has not been much work to realize the concept and support the processes in the CI analysis. We have developed a system that supports the processes of CI analysis by providing various interactive interfaces for direct comparison, trend forecast, competitive advantage analysis, and cohesive analysis with the brushing and linking concept.

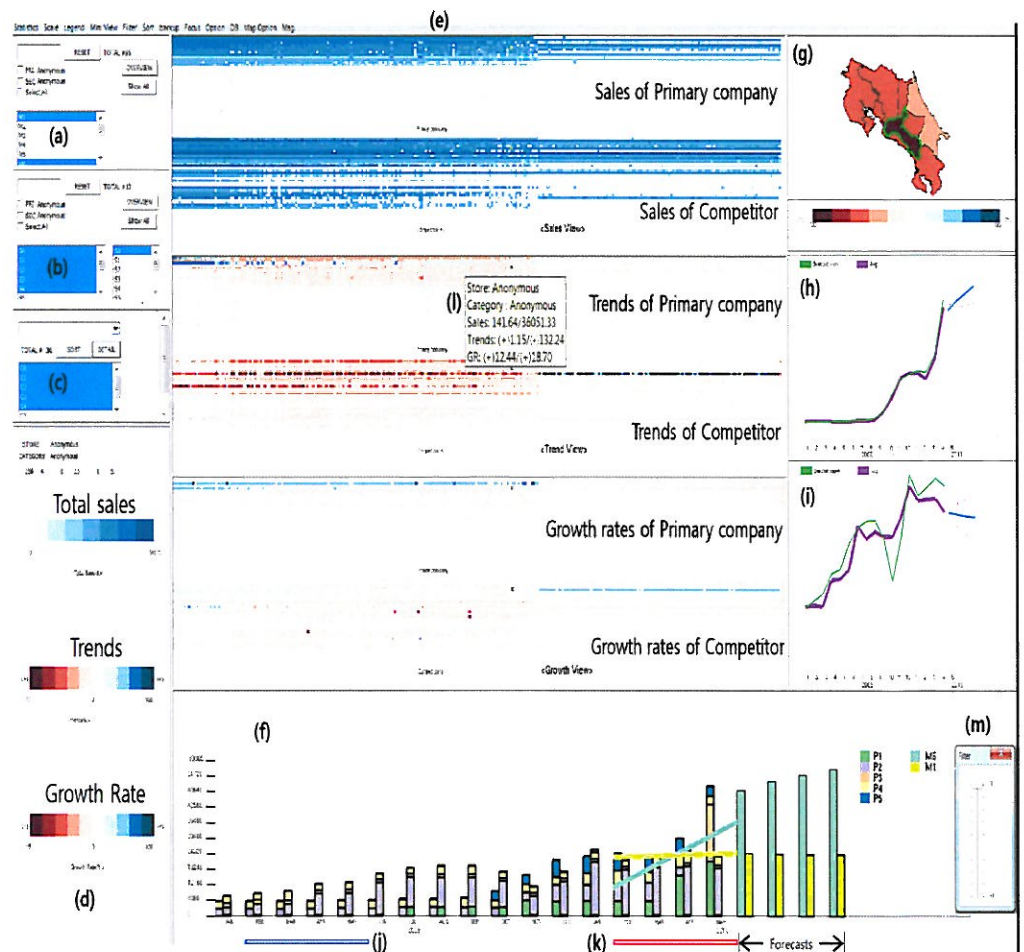
This technology exposes strengths and weaknesses of companies in sales, trends, and growth rates. One example below shows performance of 36 products in 288 stores of two companies with trend prediction. Analysts easily find stores and products where a manufacture is losing/making money for a given period compared to their competitor.

#### Collaborators:

- Commercial companies

#### Funded by:

- US Department of Homeland Security



Early Development

Lab Prototype

Commercial Product

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<http://www.VisualAnalytics-CCI.org>



## Case Study: Market Leader

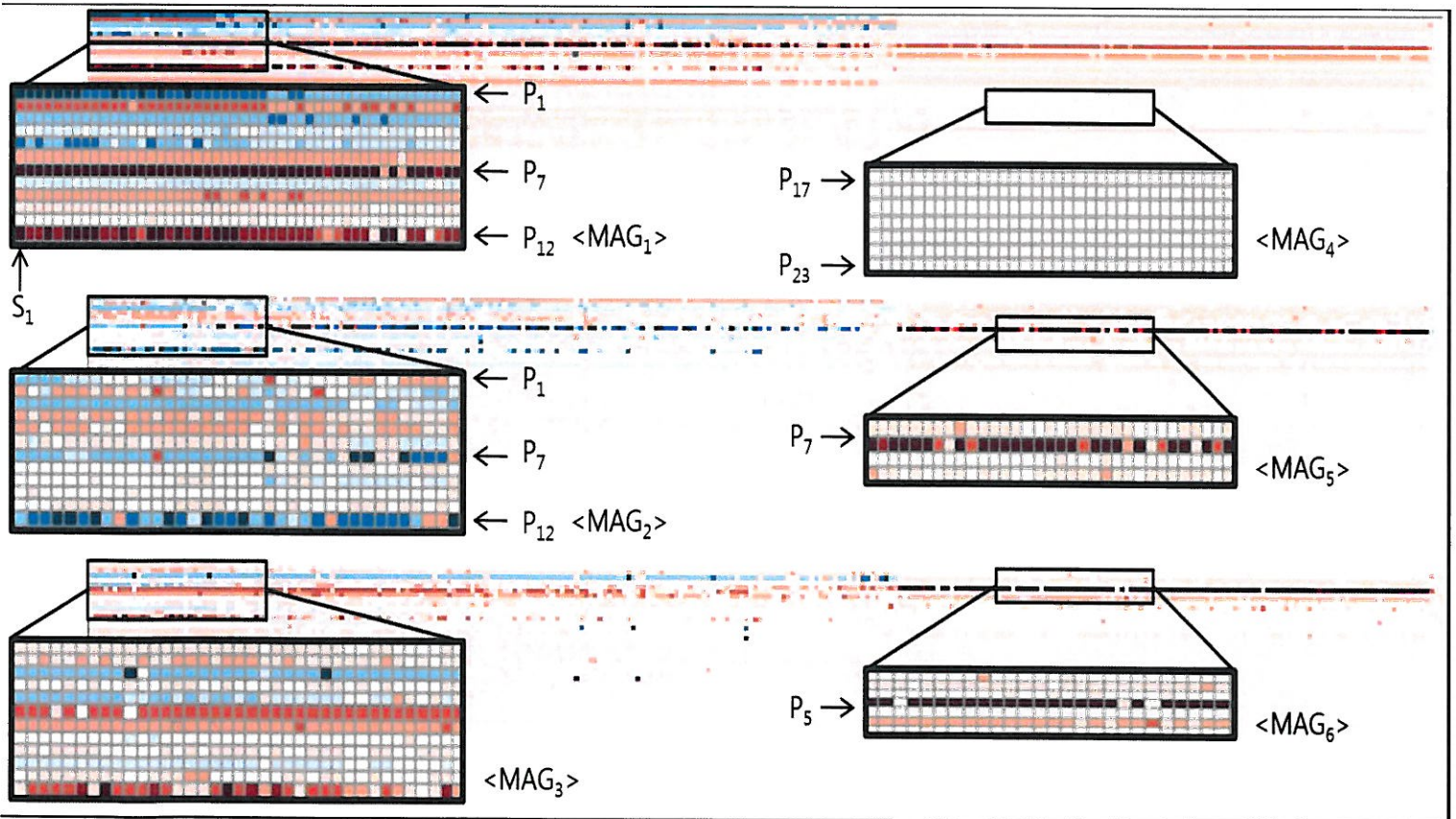
This is part of the example analysis.

- Often, an analyst, working for a company that was the market share winner, is required to analyze the competition status focusing on the market share, which requires a performance comparison to all other companies in all regions. The exploration begins in the geographical view that quickly updates the regional competition status based on the time intervals from the dynamic visual query interface.

- During the analysis, the analyst sees that the company had kept a market share higher than 50% before November 2009 but the forecast for the next month was negative in all regions. The analyst notes that the most important region, colored in the darkest red, was expected to have the most severe decrease in sales. From December 2009, the company started losing competitive advantage in three regions but still had three winning regions. It is notable that the regions that had moderate downward trends (yellow) were still keeping a competitive advantage, while others with darker red colors were losing. At the same time, forecasts kept warning of downward trends in all regions. In the end, the company did not have any winning region during February–May 2010.

### Strengths of the system in the analysis.

- All the information that analysts mainly want to investigate is presented efficiently in a given screen budget.
- All the information is well organized in multiple views to enhance analysts' overall awareness. Sales, trend estimation, and growth rates are effectively used in verifying competition and designing strategies.
- Proportional legends help analysts quickly perceive a change in situations.
- Data of interest is chosen for magnification and detailed analysis where an unknown trend is discovered.
- All the information is linked to the map for spatial analysis,
- During analysis, analysts avoid tedious selection by using length-changeable time sliders.
- Sales trends in multiple stores are effectively presented, which helps analysts find a cause for the loss of competitive advantage.



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