March 1ste 2005

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Information visualization: metaphors

- Applications of data visualization of Rabobank Group

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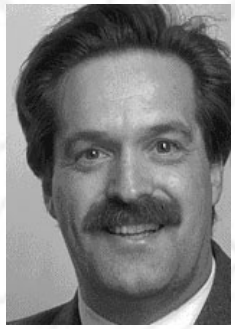
allow me to introduce …

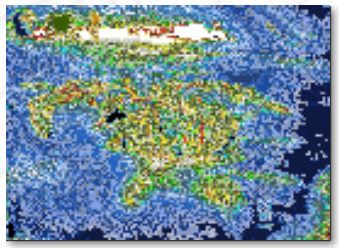
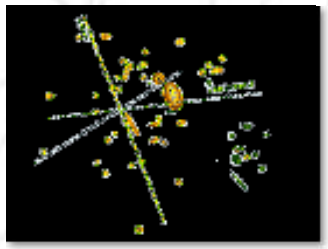
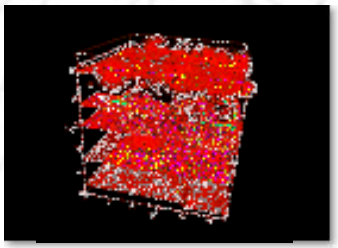
Rabobank

- dr ir R.J.A.M. (Ruud) Smeulders r.j.a.m.smeulders@rn.rabobank.nl
- Innovation Manager Technology Rabobank Group (Rabobank, Interpolis, Robeco, Alex, De Lage Landen)
- Responsible for several projects on information- and data visualization for Rabobank and Robeco Group



overview college

- Introduction
- Why information & data visualization?
- Visualization of marketing data
- Visualization of investment stocks
- Data visualization for management

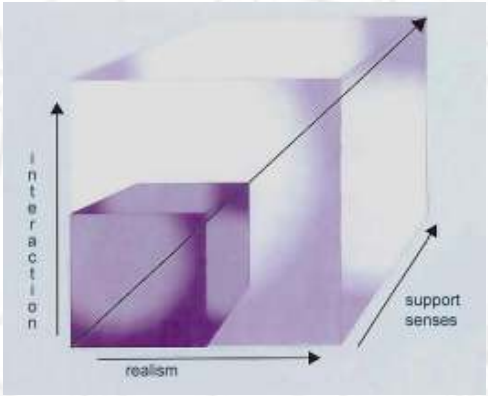




Introduction: Information Design

(CH4 Rosson & Carroll)

UI design

- More realism
- More perception
- More interaction



Perception: sensors

- Eye, ear, touch, smell, taste, balance
- Ultra violet, infra red, ultra sound,…

Gulf of Evaluation

- Perception
- Interpretation
- Making sense

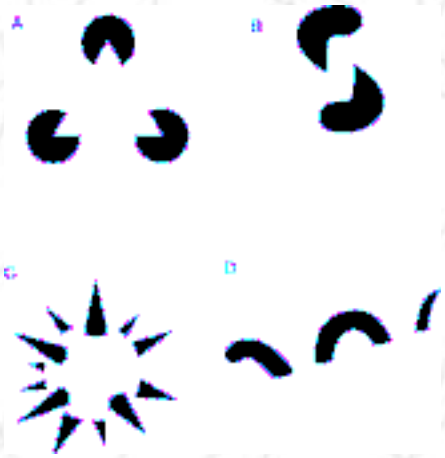
Gulf of Execution

- System goal
- Action plan
- Execution

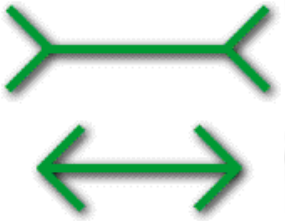
Perception: Gestalt Principles & optical illusions

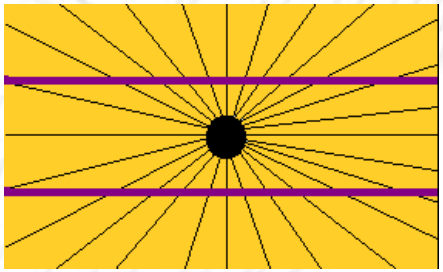
Gestalt Principles

- Proximity
- Similarity
- Closure
- Area
- Symmetry
- Continuity



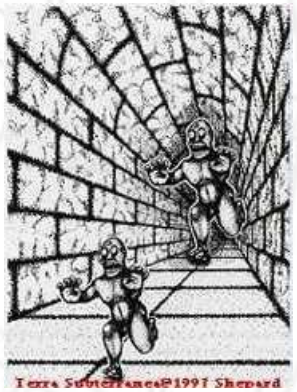
Optical Illusions

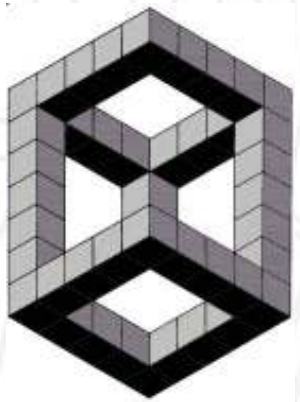


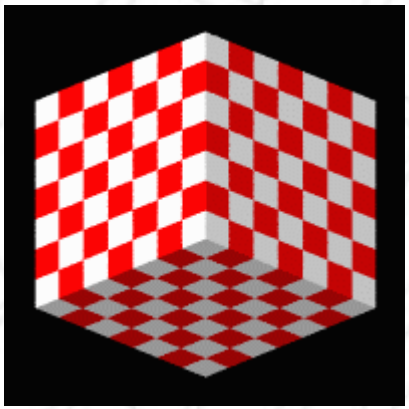


3d representation

- Size
- Interposition
- Contrast, clarity & brightness
- Shadow
- Texture
- Motion parallax

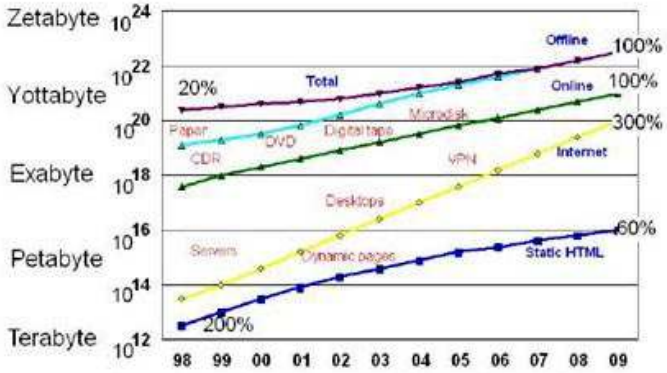






why information visualization?

- Amount of data is growing quickly
- Computing all data with (new) software is not possible (software development is too slow)
- Information visualization has proven it's value for scientific visualization
- But visualization of abstract data collections is almost unknown



Internet changes from static pages to databases, channels, VPN. Online data grows with pervasive devices; accessible from afar CDR, DVD, digital tape take over the analog world

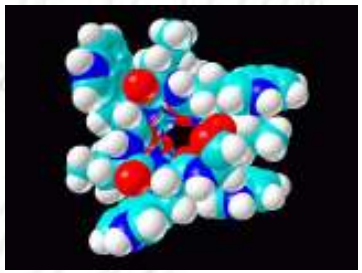
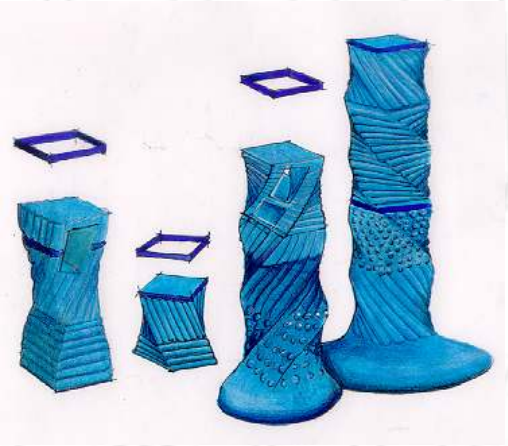
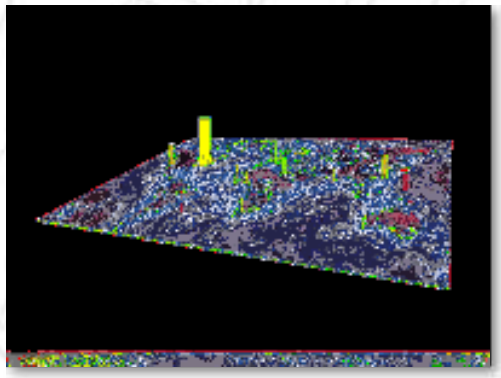


Figure above: data explosion according to IBM
Figure left: Gentechnology: ribosome + RNA + protine
Figure right: Cafeïne tunnel

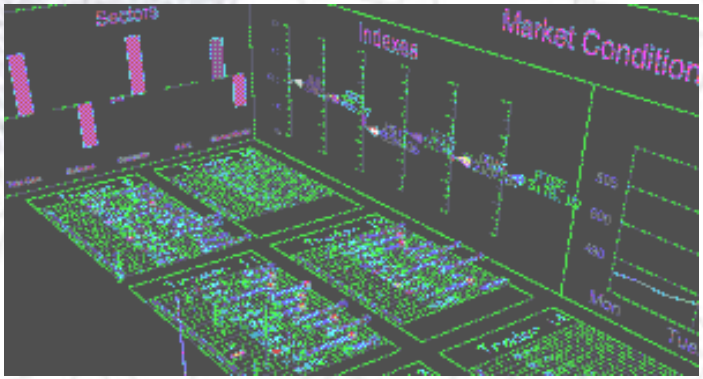
Possibilities with data visualization

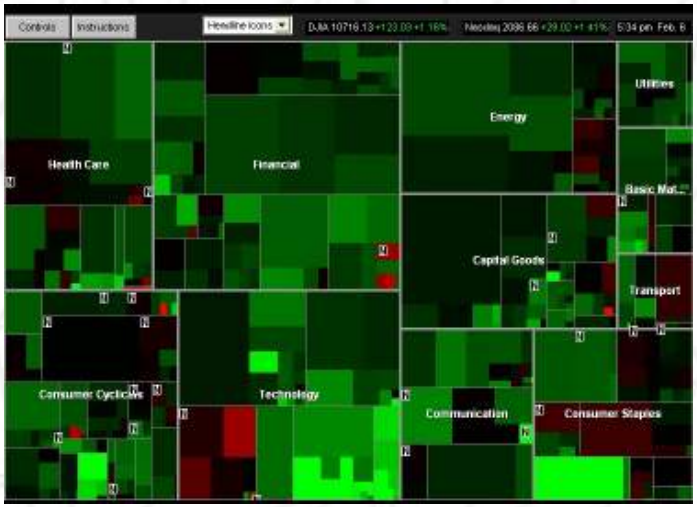
- Overview of large amounts of data
- Many variables can be visualized together
- Human eye and brain are perfect to view patterns and disparities: ideal data mining tool

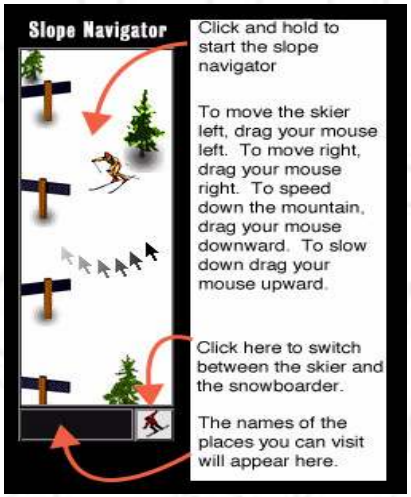




Examples from the financial world







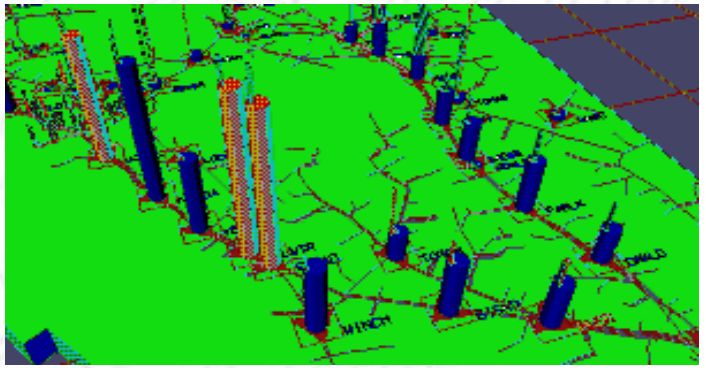
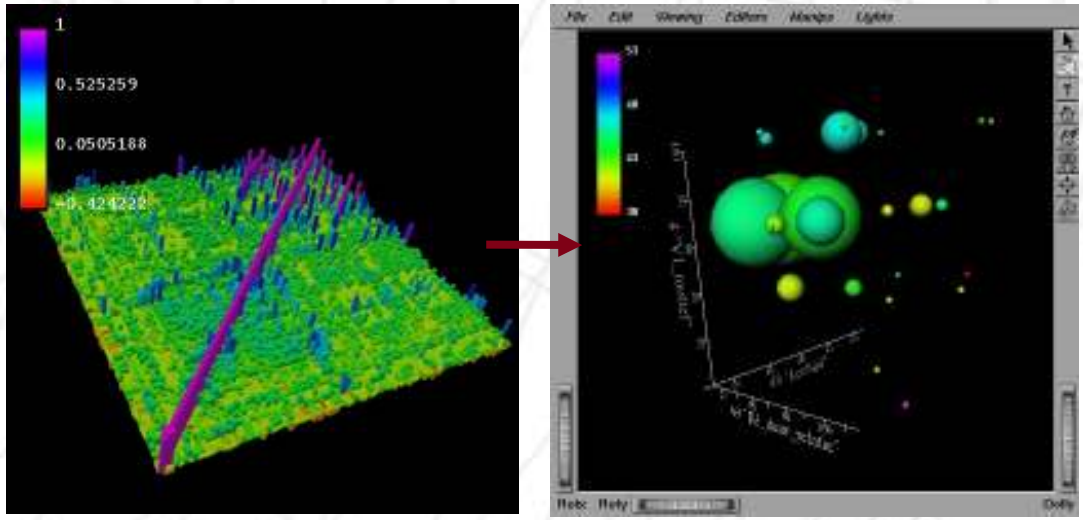


Figure above left: stock data
Figure under left: SmartMoney MarketMap
Figure above right: navigation tool with skier
Figure under right: location results company

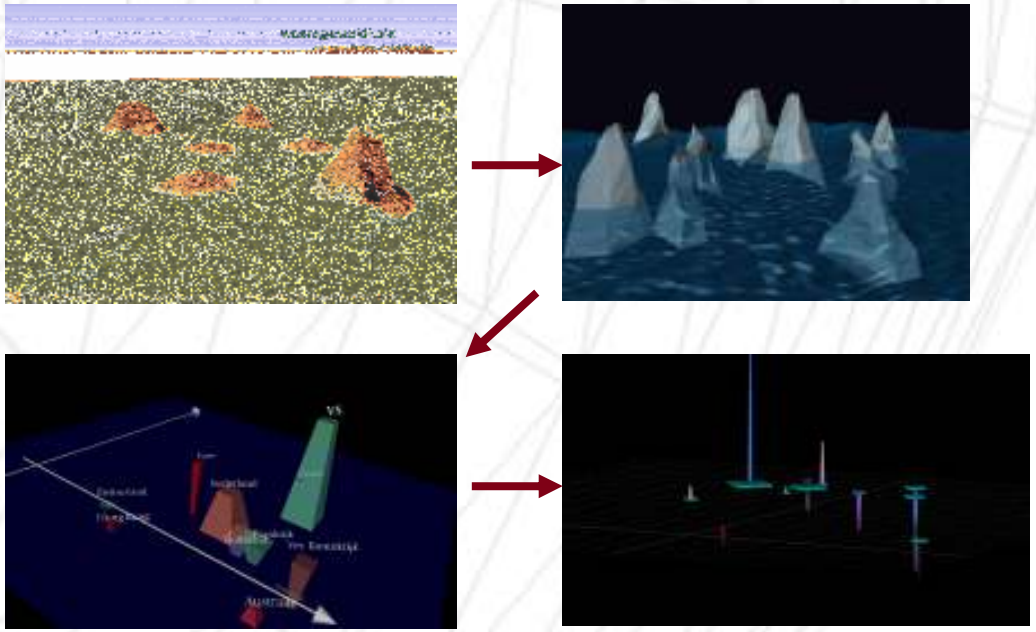
Visualization of marketing data

- Marketing data from accounting system
- Experiments with selection of 25.000 customers
- Interactive 3d correlation matrix for sorting and selecting
- 3d cube with custom properties in spheres and colors

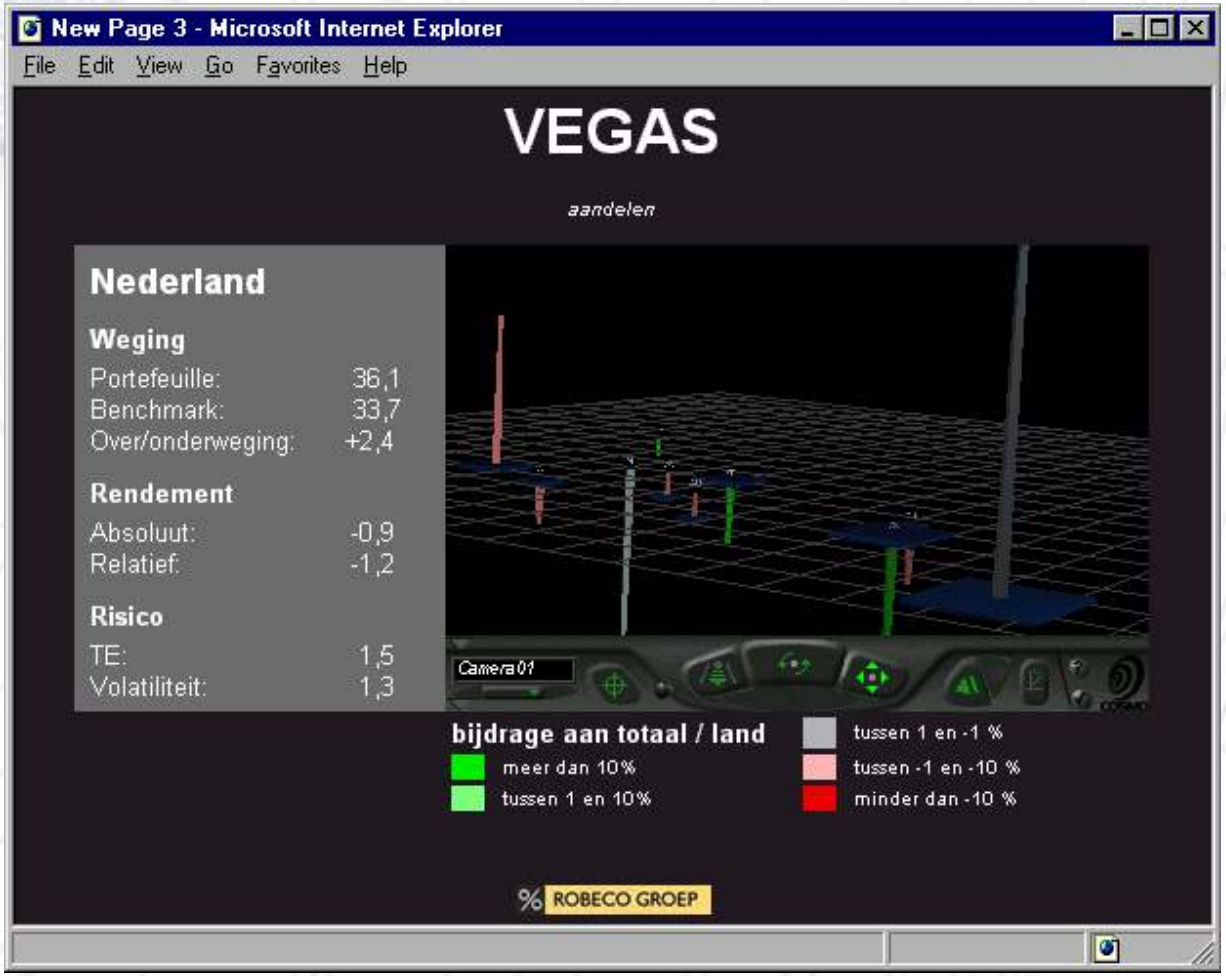


Visualization of emerging market fund

- Emerging market fund VEGAS
- In several countries with stocks from different companies
- Landscape
- Evolve to abstract landscape

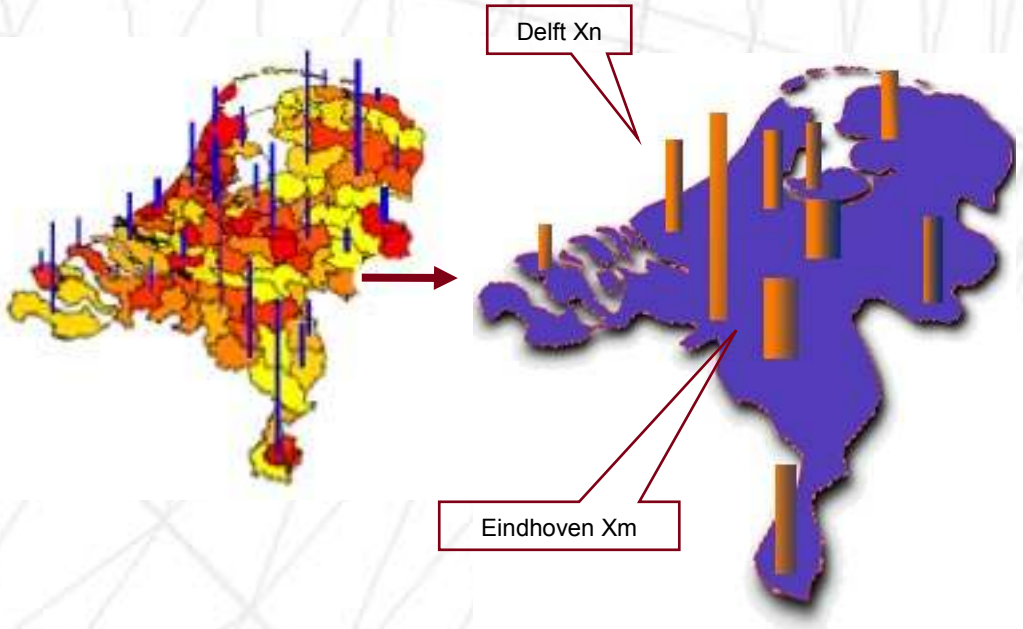


Result: 3d landscape with html UI for interaction



Data visualization for management support

- Strategy 2005+
- From 350 → 150 local banks
- Results policy
- Variables on the map of Holland



Conclusions

- Information visualization is complex due to perception and 3d representation problems
- Data visualization can handle large amounts of data
- Much possibilities (scientific and en financial visualizations) for data mining, text mining, analyses, variables in GIS
- Still in early stage of life cycle of technology
- A lot of work to be done to design optimal UI for 3d data visualization