Value Driver Trees for Business Analysis

- Value driver trees (VDTs) are a specific application case for multivariate graphs from business analysis
- Based on a model, VDTs visualize different value drivers (e.g., key performance indicators) and their combination based on operators

Nodes with Embedded Visualizations

- Title with node description
- Operator specifying the type of calculation
- Values and Visualization of the node
- Trend indicator

  - Simple visualizations to allow quick comprehension: bar charts and line charts
  - Color-coding of value type: blue – fixed values (i.e., past years); orange – values for upcoming years; green – simulated values
  - 3 different level of details for nodes:
    (a) only core information (i.e., latest value),
    (b) core information + visualization, or
    (c) detailed information for each year

Challenges of VDTs

- VDTs feature many challenges, most importantly,
  - showing multiple values per node,
  - handling large graph sizes (up to 5,000 nodes),
  - supporting navigation to access node details,
  - preserving an overview of the tree structure,
  - enabling manipulation of values to support simulations.

- We tackle these challenges by providing concepts for embedded visualizations in nodes, local and semantic zooming, as well as simulation and prediction of numbers.

Semantic Zooming in Local Focus Regions

- Semantic zooming: locally for a region of interest
- Zoom impact is defined by:
  (a) radius around the cursor, or
  (b) the structure, i.e., children and nearest siblings
- Increasing zoom factor:
  - increases level of detail + region of influence
- Geometric zooming only used when:
  zoom level > highest level of detail
- Indicator at the nodes (magnifier icon):
  handle to move or remove the region
- Multiple zoom interactions for multiple regions of interest at the same time possible

Simulation and Prediction in VDTs

- Start simulation by changing node values:
  (a) clicking on the value label to input a number, or
  (b) simply dragging the visualizations’ bar or line
- Simulated value is displayed alongside the originally values (colored differently)
- Simulation may also affect further data points, i.e., the following years
- Simulated value is propagated to parent and child nodes (highlighted)
- Propagation to children:
  Not necessarily defined ➔ adapt used apportionment manually

Prototype