

# Improving Value Driver Trees to Enhance Business Data Analysis

Tom Horak, Ulrike Kister, Raimund Dachzelt



## 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

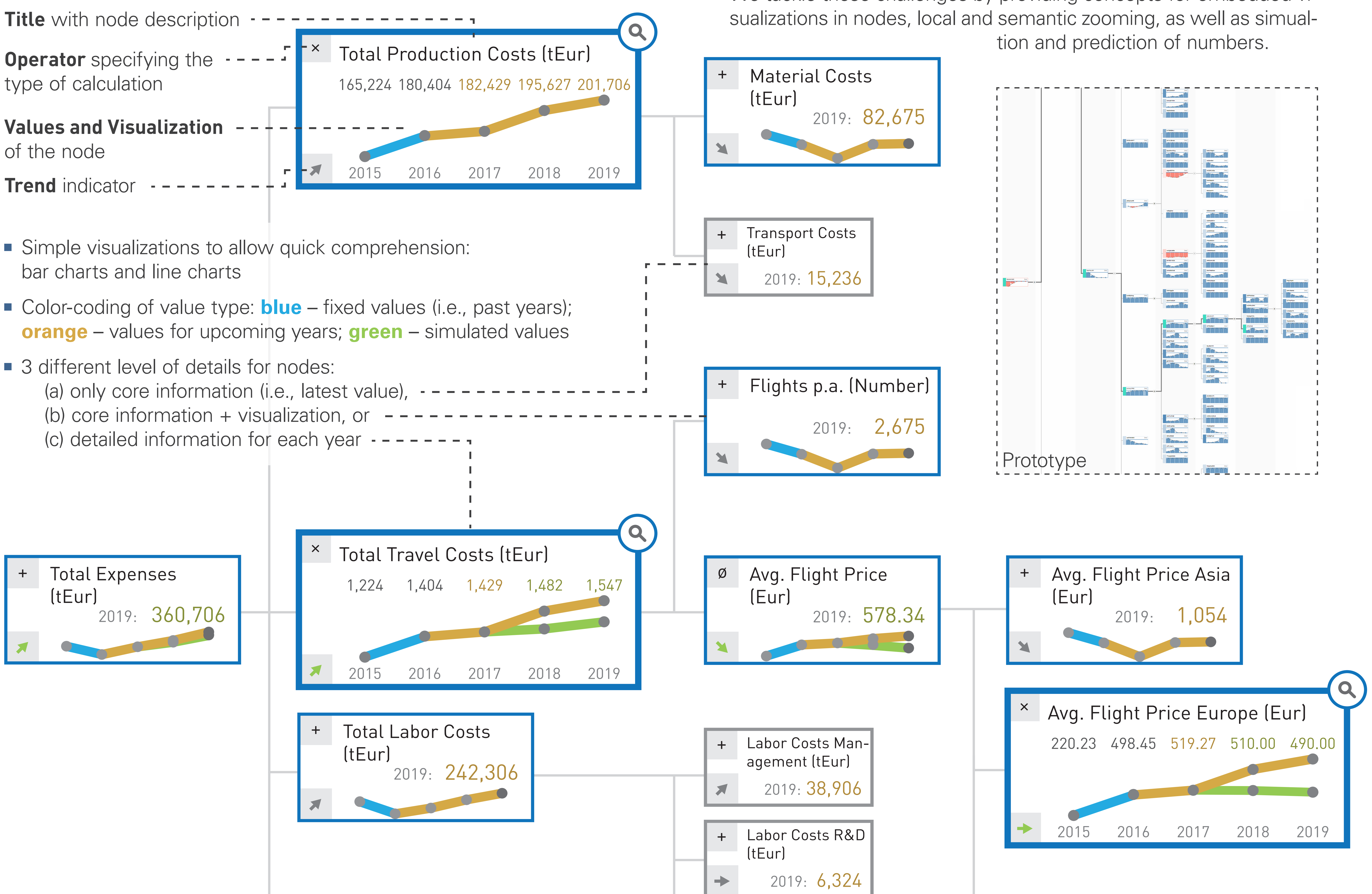
**Title** with node description

**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:
  - only core information (i.e., latest value),
  - core information + visualization, or
  - 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:
  - radius around the cursor, or
  - 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:
  - clicking on the value label to input a number, or
  - 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

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