

# Usability Inspection – DQProv Explorer

## Supplemental Material II – Capturing and Visualizing Provenance from Data Wrangling

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## 1 Evaluation Structure

The evaluation was split into two different studies, interviews and a focus group. Both groups got an introduction. The participants received paper prototypes and had to solve questions and tasks, as well as give feedback on the usability in the end.

### 1.1 Introduction

- Introduction on course of interview
- General questions (age, experience, etc.)

### 1.2 Goal

The evaluation had the following goals:

- Validate if design an used symbols (add, delete, merge icons) are understandable by participants.
- Discovery of possible improvements to the design.

The following questions were formulated to be used for determining tasks:

- Is the prototype intuitive?

- Are the visualizations for (1) quality metrics, (2) detail view, (3) column edit operations understandable?
- Can the individual steps be followed (e.g. change path, show detail view, ...)

### 1.3 Questions

The subjects received questions and tasks to solve with the paper prototypes on the topics:

- Quality metrics,
- Analysis of metric changes,
- Detail views,
- Alternate provenance graph paths,
- Column removal, creation, and merging, and
- Annotations

The investigator continuously guided the participants through the experiment, asking questions for different tasks and consecutive operations. Below some exemplary figures are shown, which were used as paper prototypes during the experiment, so participants could use pencils to add notes.

### 1.4 Feedback

The participants were asked to give feedback on the three most and least favorite design aspects, as well as general remarks.

- Less colors means the dataset is cleaner (also noted in focus group)
- Operations are shown prominently and pleasantly
- Clean, without aid lines
- Provenance graph also shows alternate paths
- Provenance graph is similar to git

### Übersicht Simple

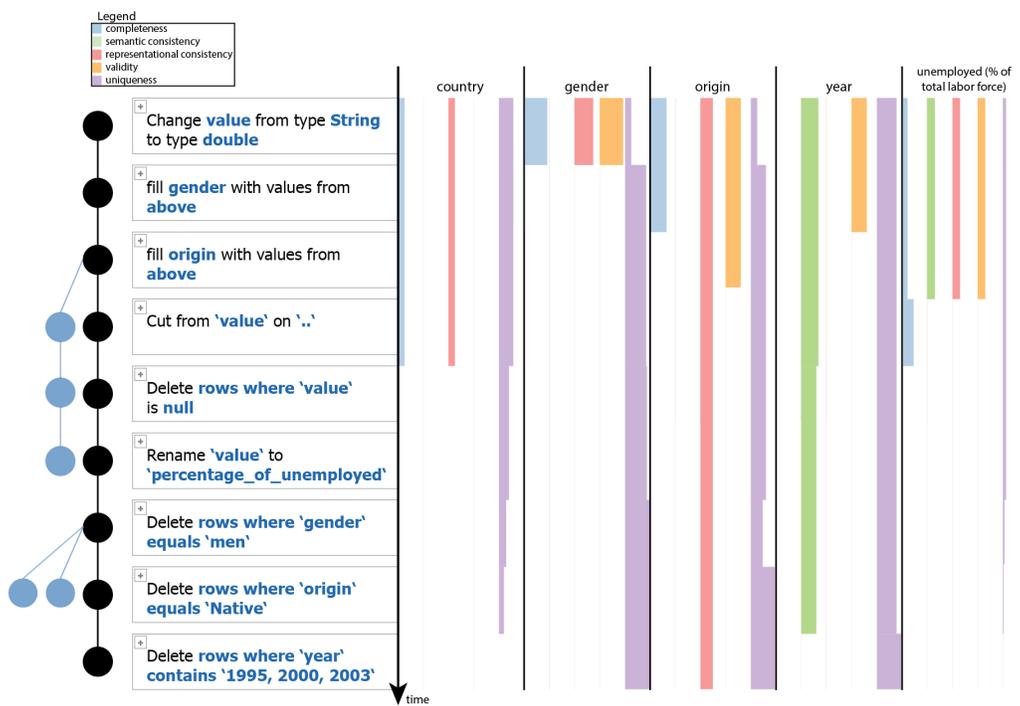


Figure 1: Overview of the paper prototype the participants had to solve questions and task with.

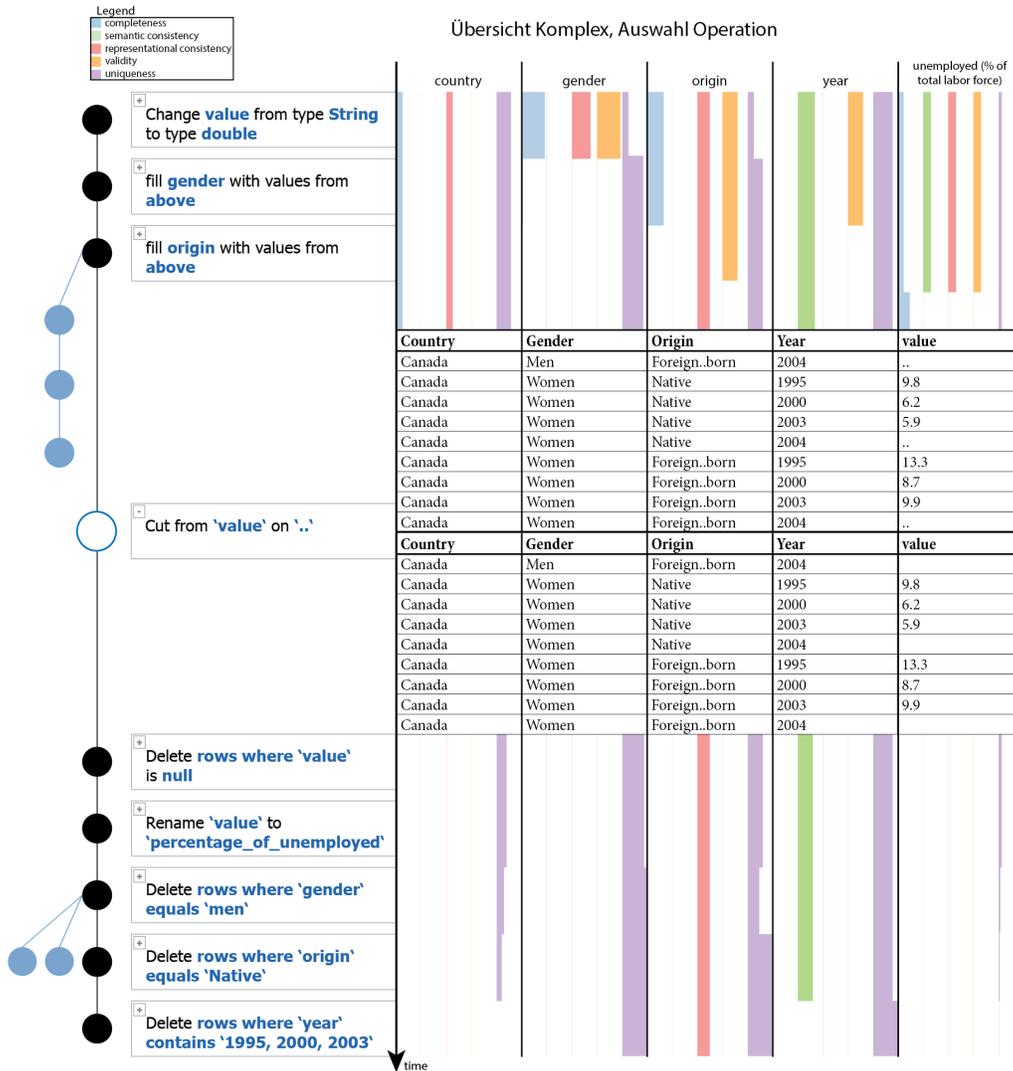


Figure 2: In the detail view the raw data is shown, with the data showing the state directly before and after an operation.

### **1.4.1 Interview**

- Parameters are highlighted in operations
- Delete, insert, and merge visualizations
- Effects of operations can be seen in the bar chart visualization
- Difference of data in detail view
- The plus symbol that shows the ability to open a detail view
- the quality bars can be compared easily

### **1.4.2 Focus Group**

- It can be seen how the dataset looked before and after the operation,
- The detail view is helpful to follow changes,
- Structure is well understandable,
- Overview of the changes,
- Effect of operations can be followed for the most parts.