Media Transparency Database Visualization

188.943 Praktikum aus Visual Computing

Abstract

The “media transparency database” contains the accumulated amount of money spent by governmental organizations on media companies. This data can be explored as a multimodal dynamic network. Existing web projects already present solutions to visualize the dataset, but to analyse the data further a user needs more interaction methods. I implemented a task-tailored dashboard with multiple connected views, which implements brushing and linking to enable the user to analyse the dataset in an easy to use matter.

Related Work

The “media transparency database” is available since the third quarter of 2012. Since then several visualizations got presented:

- [F. Lang] presents a visualization that uses grouping of the media entities to reduce the screen space and complexity of the visualization. It only uses one quarter of one year of the total data. It is possible to interact with the visualization and ungroup the media entities.
- [M. Hametner] presents a static visualization with bar charts and a line plot as a visualization for time oriented data by the Austrian newspaper “Der Standard”.
- One of my colleagues implemented a force directed node link diagram. The user of this visualization is able to interact with the data and filter it with different queries. But the force directed node link diagram was too slow for the huge database [Schrempf2014].
- [S. Peter et. al] implemented a website to get an overview of the media dataset. It features multiple visualizations which are all interactive but not connected to one dashboard.

The first two visualizations are presentations of an analysis of the data. But the last two approaches are visualizations that support the user to analyze and investigate into the data. The force directed node link diagram has the problem that it is too slow to render a nice overview of the dynamic network. Additionally it is hard to interpret the payment flow, because it is visually encoded in the size of the nodes of the diagram.

The visualization of [S. Peter et. al] is stable, easy and fast to interact. But the visualizations are distributed onto 4 different web pages, which makes it hard to combine the insight of the user from one visualization with the others. Additionally the payment flow visualization is restricted to only 800 relations.

Technologies

The following technologies are used:

- *JavaScript*: a script language to create dynamic client side webpage.
- *Data-Driven Documents*: A JavaScript library for manipulating documents based on data.
- *jQuery*: A fast, small, and feature-rich JavaScript library.
- *Bootstrap*: A framework for developing responsive, mobile first projects on the web.
- *Brunch*: A node.js build tool to compile scripts and styles and to concatenate scripts and styles.
- *clean-css*: Is a node.js library for minifying CSS files.
- *uglify-js*: Is a node.js library for minifying JavaScript files.
- *crossfilter*: Is a JavaScript library to explore multivariate datasets with coordinated views.
- *DC*: Is a JavaScript library with native crossfilter support to create charts for multidimensional data exploration
- *Git*: Is used as version control system.

Problem Description

Governmental advertisement in media and sponsorships are a possible way to influence press opinion. Therefore, the Austrian parliament passed a law that made it mandatory for governmental organizations to disclose their expenses for advertisements in different media (TV, radio, print, as well as online).

This so-called "media transparency database" is made publicly available by the Austrian Regulatory Authority for Broadcasting and Telecommunications (RTR) via the Austrian open government data portal.

It contains the accumulated amount of money transferred in a certain quarter of the year for each governmental organization and media company. This database can be explored as a multimodal dynamic network.

Data Structure

The media transparency database is structured as a Table with each row containing a relation from one governmental organization (*Rechtsträger*) to one media company (*Medium*). This relation contains the amount of transfered money (*Euro*), the quarter of the year (*Jahr Quartal*) and the law of the reason of the payment (*Gesetz*).

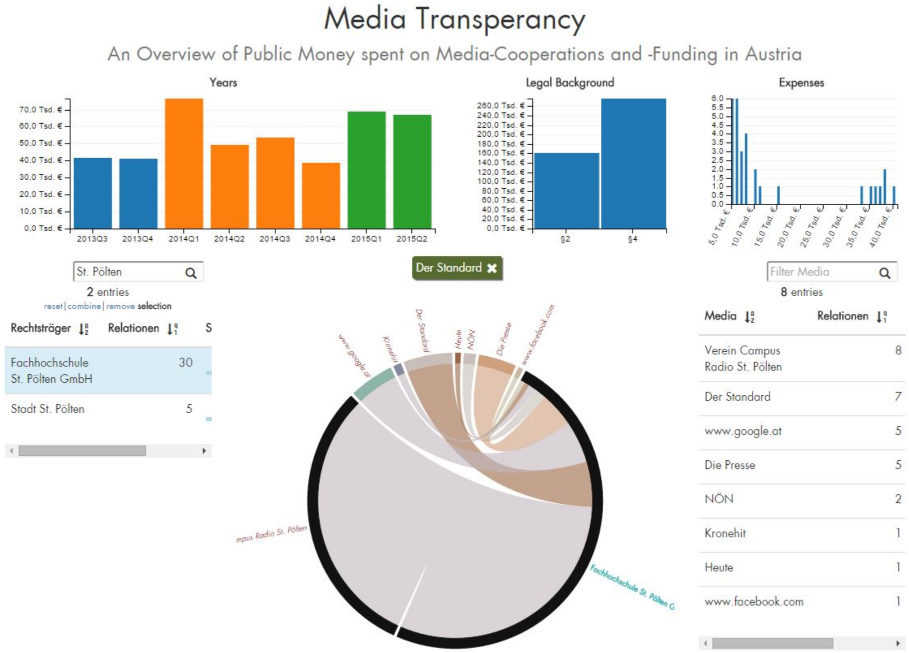
The table contains over 145000 entries over 12 quarters. So that one quarter contains 13000 data entries. There are over 1000 governmental organizations and media companies.

The data quality of the database is not sufficient enough for some data entries. These entries include spelling mistakes or are just differently formated.

Examples

Dashboard

(Click on the image to go the the video)



Media Transperancy

An Overview of Public Money spent on Media-Cooperations and -Funding in Austria

St. Pölten

2 entries

reset | combine | remove selection

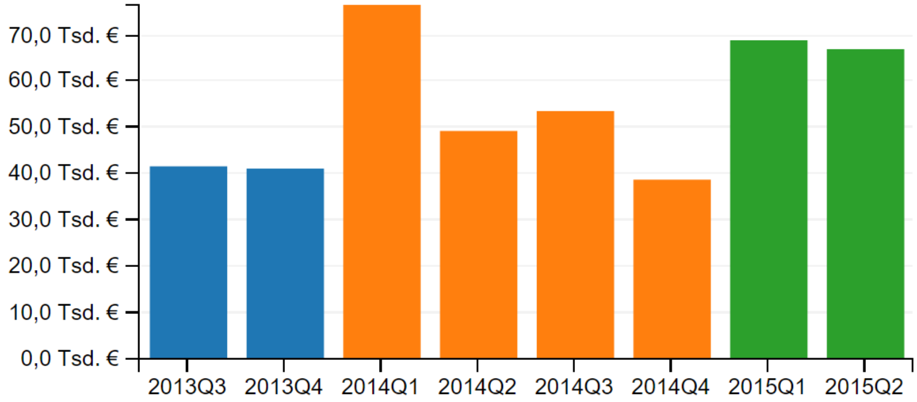
Rechtsträger	Relationen	S
Fachhochschule St. Pölten GmbH	30	
Stadt St. Pölten	5	

Filter Media

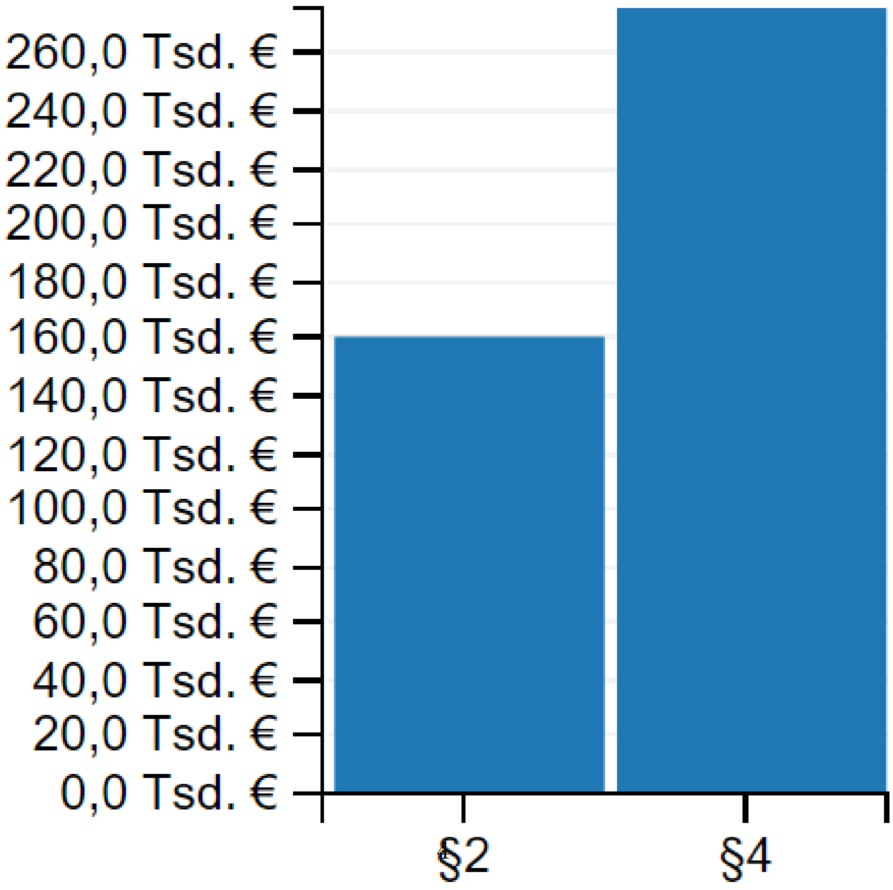
8 entries

Media	Relationen
Verein Campus Radio St. Pölten	8
Der Standard	7
www.google.at	5
Die Presse	5
NÖN	2
Kronehit	1
Heute	1
www.facebook.com	1

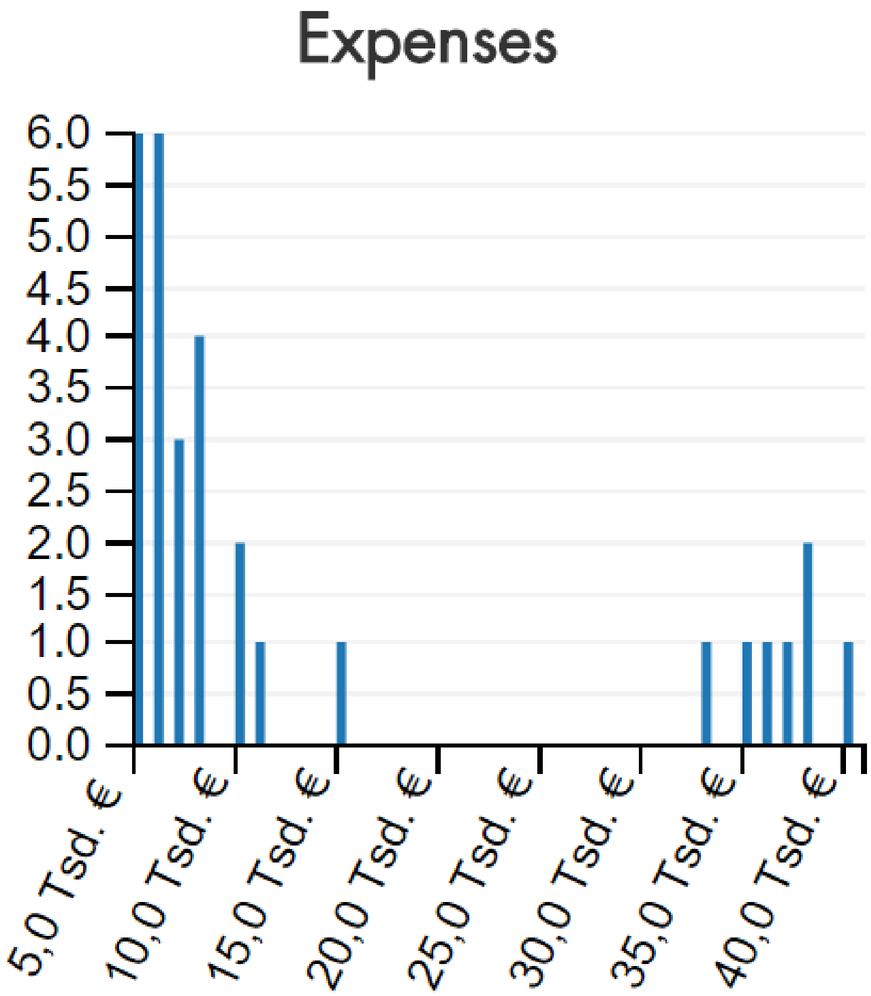
Filters



Years



Legal Background



Flow Visualization

Install

1. install node.js
2. install brunch:

```
npm install -g brunch
```

3. install local packages:

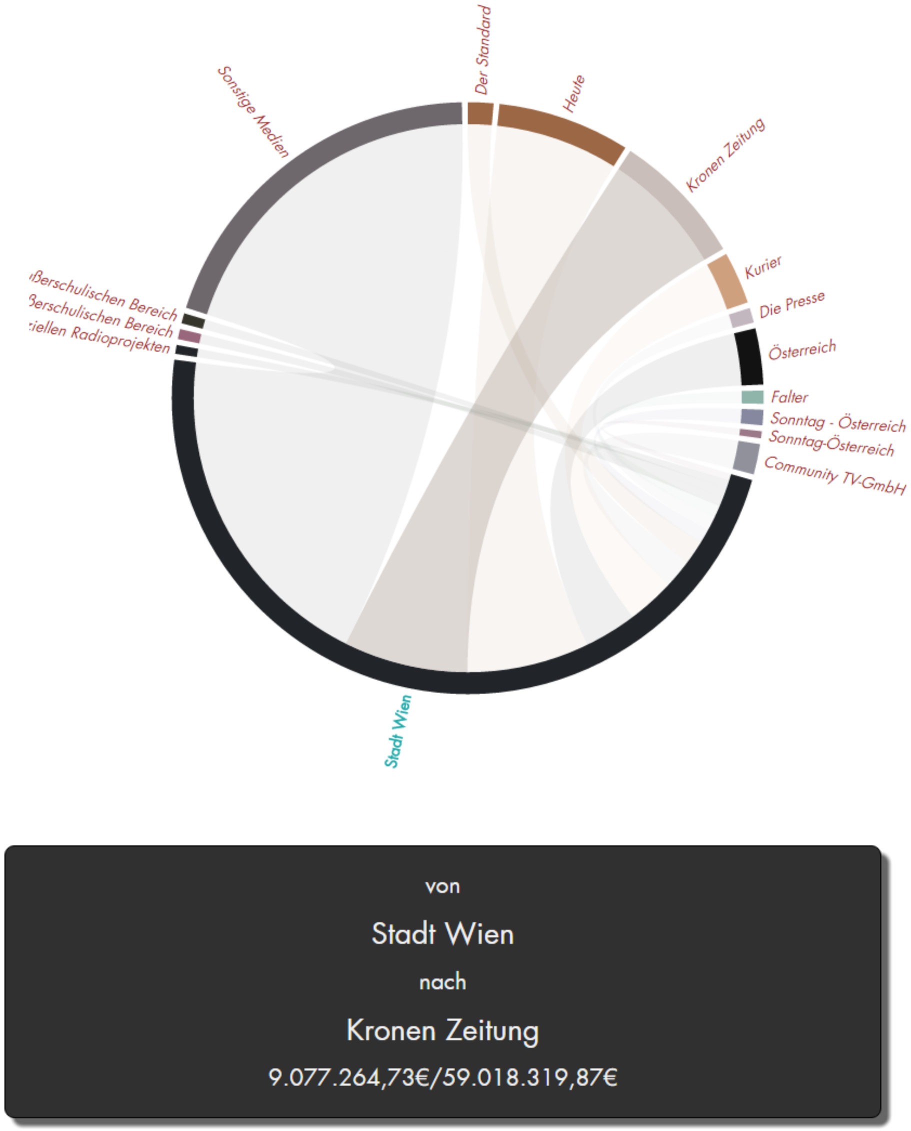

Der Standard
Heute
Kronen Zeitung
Kurier
Die Presse
Österreich
Falter
Sonntag - Österreich
Sonntag-Österreich
Community TV-GmbH
Stadt Wien
Sonstige Medien
ißerschulischen Bereich
ßerschulischen Bereich
ziellen Radioprojekten
von
Stadt Wien
nach
Kronen Zeitung
9.077.264,73€/59.018.319,87€

Figure 1:

```
npm install --save-dev brunch javascript-brunch css-brunch sass-brunch
queue-async
```

4. install bower

Run

develop standard run

```
brunch build
```

develop run with server

```
brunch watch --server
```

The standard port for the brunch server is 3333 (`localhost:3333`)

release build

```
brunch build --production
```