

# Interactive Systems 3

## Assessed Exercise 1

### **Team members:**

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## **1. Data Wrangling**

For the data wrangling we used LibreOffice in the lab. We merged the two given files and modified the data from both files so they would match. After that, the country columns in both files were the same so we deleted the extra one. We also found some string values in columns with float values, so we deleted them so the program won't have any problems displaying the data.

We have considered doing an average of the values in a column and replace the empty values with it but were unsure if this is a smart move. So we have not added any values in place of the ones missing and will not be displayed by the program.

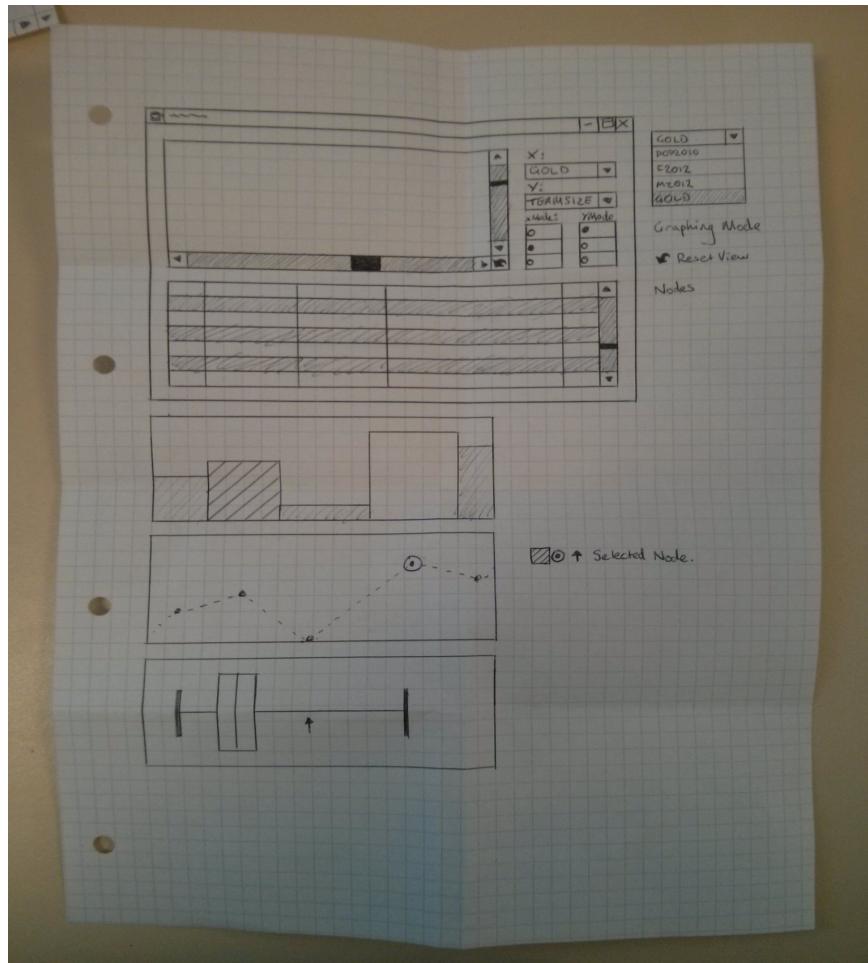
## **2. Video of the final paper prototype**

During the video, one person was filming it, another was interacting with the prototype, using a pencil for accuracy, and a person handling the interactions. We filmed the paper prototype using a smartphone, removed the sounds and put a calm soundtrack instead.

**Link to video:** [http://www.youtube.com/watch?v=RO4tP3q\\_bmY](http://www.youtube.com/watch?v=RO4tP3q_bmY)

### 3. Paper prototypes

#### Prototype 1



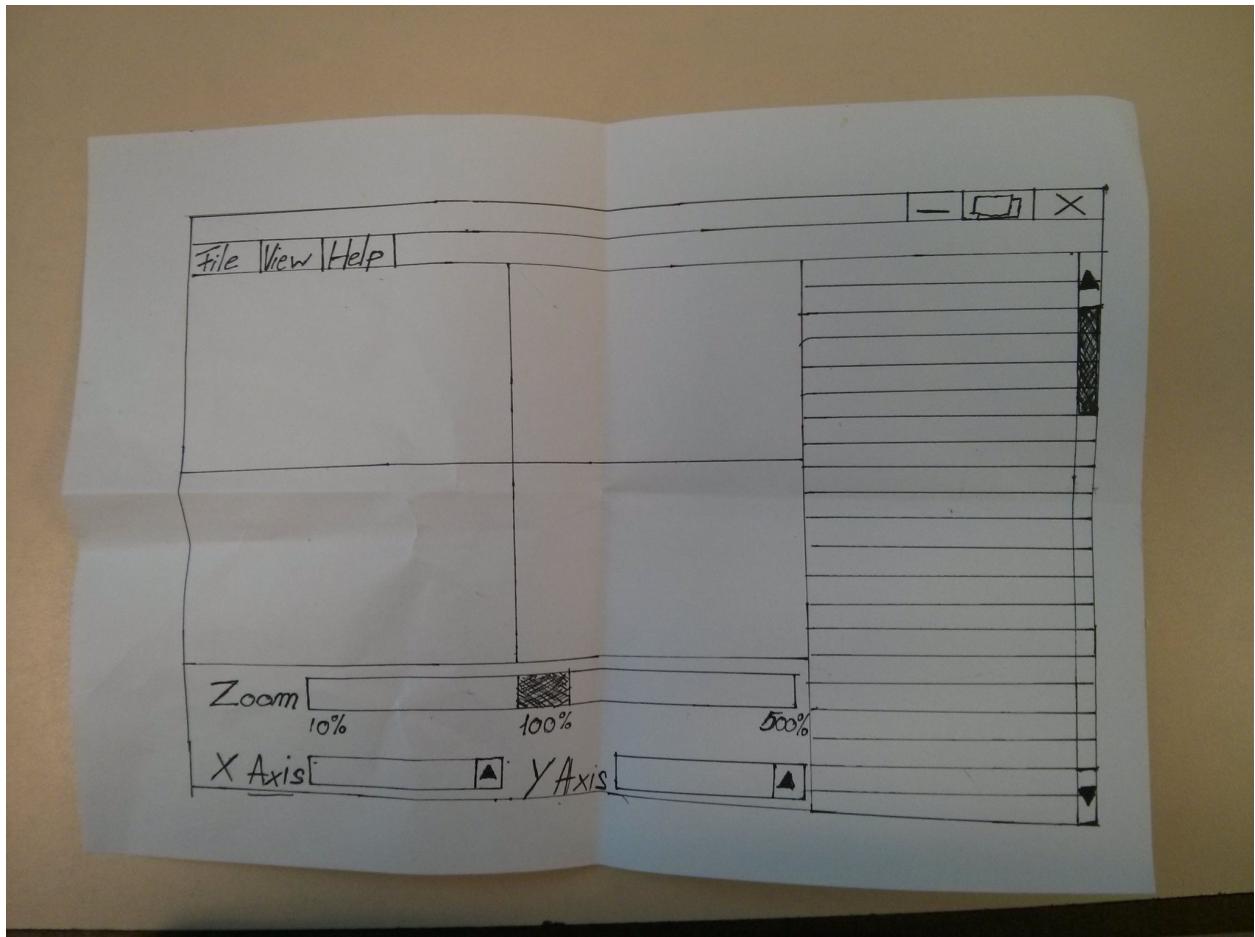
The design philosophy behind this prototype was to maximise simplicity whilst still enabling the user to interact in a natural way. Because more complex input methods such as multitouch were unavailable to us, we had to control graph transforms with sliders.

The combo boxes for X and Y axes would list every column for plotting, while this made sense at the time, discussing it with the team lead us to realise that it would be incredibly impractical to have an overwhelming popout of every option.

There was a consideration of different graph types, each would allow node selection and each would have different input parameters. While this would enhance data visualisation, the idea was scrapped because interaction would not be consistent across types.

The positioning of the graph on the top left along with alternate shading were two features that made it through to the final design.

## Prototype 2



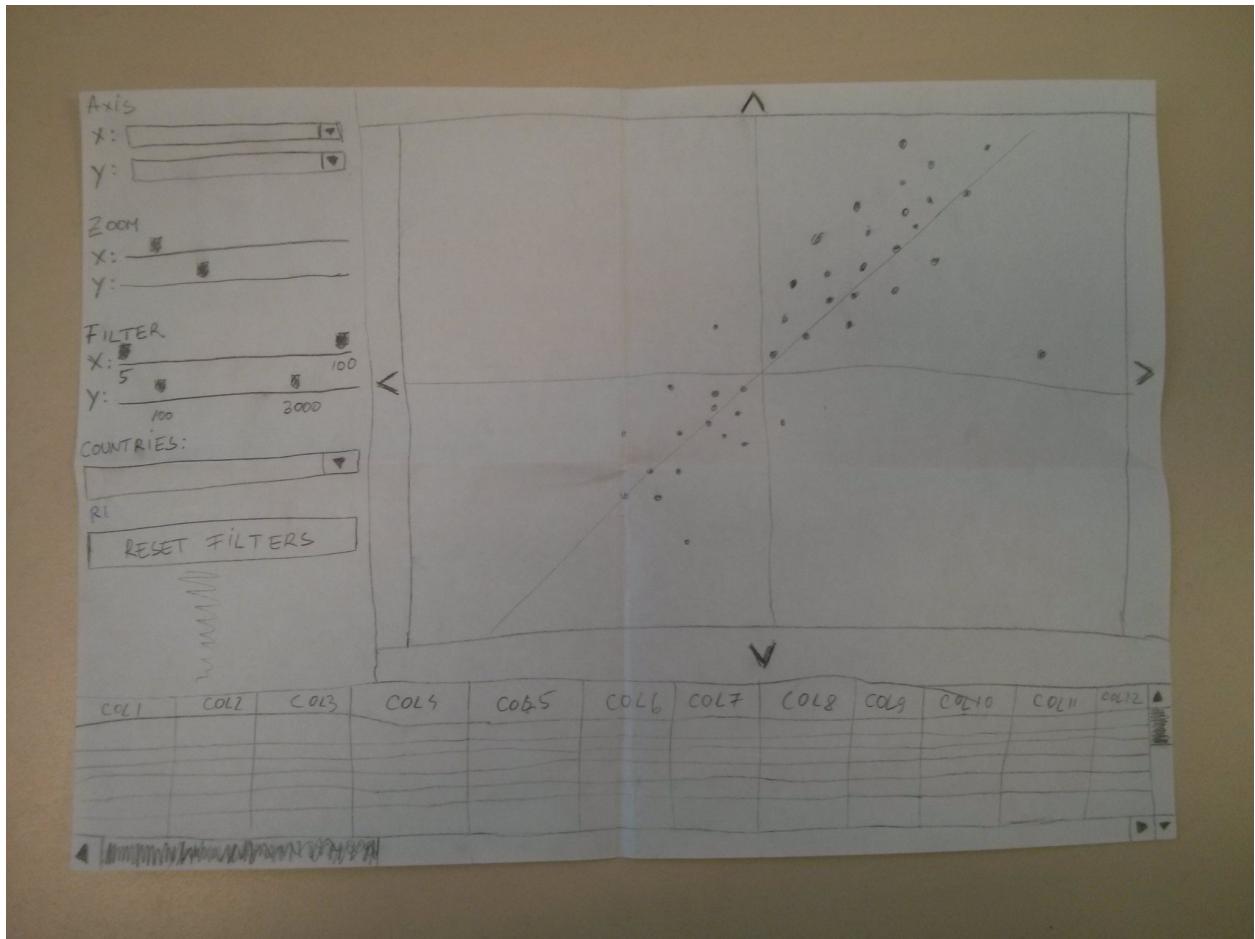
The idea of the design was to leverage elements of the TradeViewer application given as the second year assessed exercise for the Information Management course. The prototype was designed with simplicity in mind, to offer only basic operations whilst offering natural look-and-feel and interaction.

The use of a scatter plot view that allows the ability to drag-and-drop to change the position of the axis is one that enhanced this. It is also a feature that was included in the final design.

The system would allow scaling (zooming) for the whole graph, not the individual axes. The list on the right hand side was intended to show the details for a selected item in the graph.

Selection of the X and Y axes are done by using a drop-down menu with a filter in which the user can type to narrow the range of results. This allows quickly finding the desired field when a large number of possible entries are available. This idea is one that made it into the final design.

## Prototype 3



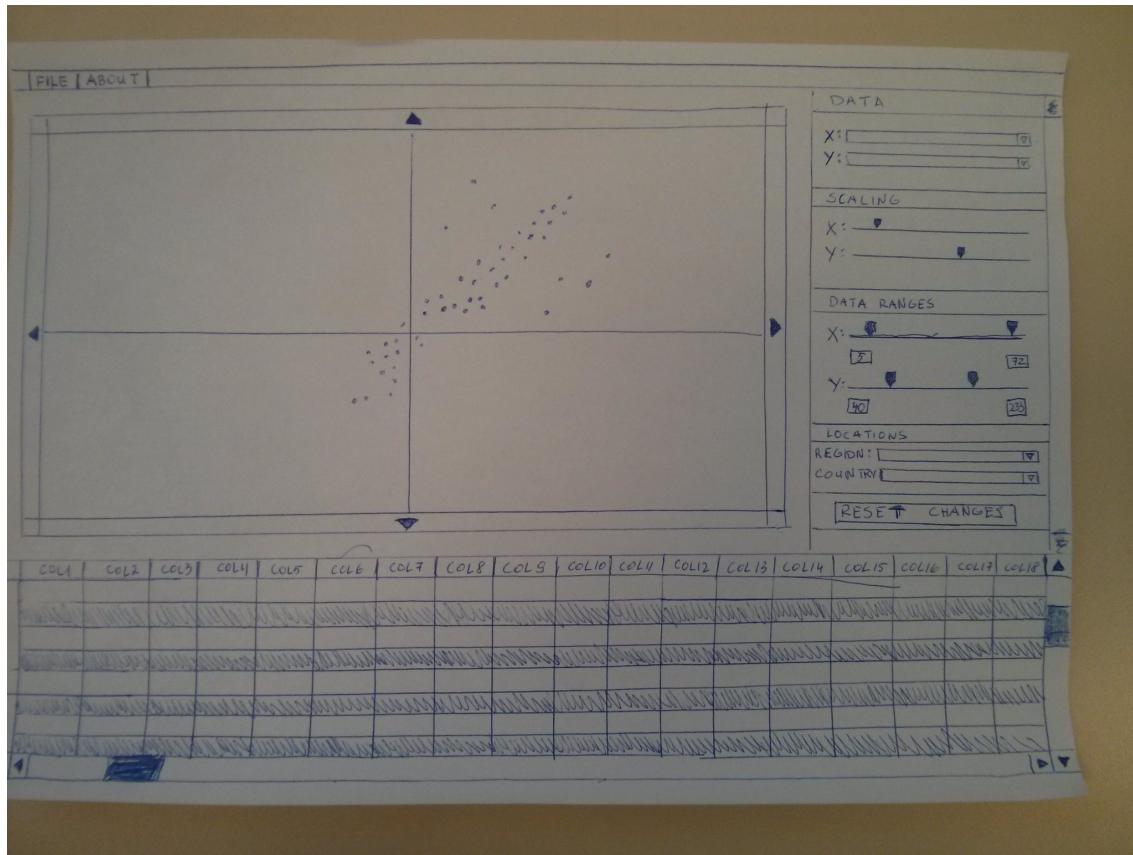
This prototype displays the information as a scatter plot.

Features:

- can select the columns to be represented on the X and Y axis.
- can be panned by either pressing the side buttons or by dragging empty space.
- can be scaled on both the X and Y axis.
- can filter by the values in the X and Y axis as well as by countries.
- can reset all filters by clicking a button.
- displays the raw data in a scrollable table.

After discussions with the team, we decided to move the settings pane on the right side. Also, we decided to include a “Regions” ComboBox which would include continents and other regions. This would contain checkboxes. “Select all” and “Select none” items would be included to allow easier selection.

## 4. Final prototype



We have identified the main issues in our earlier prototypes and picked out the best features from each one of them to create our final prototype. It now features a minimalistic design which allows users to easily analyse and filter the data.

We decided to stick to the standards and have data import option under the file drop-down in the top left corner of the page. The biggest structural change in the user interface was moving the sidebar to right hand side as the majority of people look to the top-left corner when they first open up any application. In addition to that, users might find the options sidebar too annoying as it interferes with the graph during data analysis.

The sidebar now has headings and all data selection and filtering options have been separated, thus removing ambiguity. Scalable sliders make it easy to scale the graph to different values in the dataset or select specific data ranges. If a user wishes to put in precise values, he can do that by altering the numbers in the input boxes, right below the sliders.

The design of the data display underneath the graph had some minor changes done to improve readability. Every second row now has some shading added so it is much easier to read.

## 5. Heuristic evaluations / think alouds

### Visibility of system status

The system only has two real states: idle and plotting. Currently, the interface can mislead the user as we do not make it clear that the order of operations is: Load file, Select axes, transform graph. We plan to rectify this by enabling/disabling controls as needed.

### Match between system and the real world

Since this is a data driven application, it was difficult to avoid technical terms and present our interface in a more natural way. We have used statistics related keywords to rectify this.

### User control and freedom

We have provided a button for the user to reset the view in the event that they wish to return to an unmodified graph. Undo/Redo is not included.

### Consistency and standards

We have intentionally avoided “making up” keywords in an attempt to avoid confusing the user. As stated above we have used statistics related keywords. One slight redundancy may be the graph panning via mouse drag and buttons.

### Error prevention

Given that controls will be locked until needed, users should not be able to provide erroneous input. Analogue values are tied to controls such as sliders.

### Recognition rather than recall

Most controls are always visible, as such the user doesn't need to keep these in mind.

### Flexibility and efficiency of use

One flexibility we have decided on is the multiple options of selecting nodes/rows. We plan to allow users to select countries from a list, or group select regions.

### Aesthetic and minimalist design

We have adhered to a very simplistic design, there is not much text outside of the table.

### Help users recognize, diagnose, and recover from errors

We plan to outright prevent errors by locking controls and as such error recovery was not considered.

### Help and documentation

Outside of the planned documentation, help will be provided under the about menu option.