

Requirements

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Requirements - general

- A client side internet application written in D3.js is required. No php or serverside code should be used.
- The layout and user interaction should be intuitive to the user
- **In particular, transitions should be used to let the viewer know what data are new, changing, or exiting.**
- Environment: The application must run in a recent version of Firefox
- The project report and interview should evidence of the student having detailed and critical knowledge of D3's "General Update Pattern" and how this has been adapted to the project.
- **You must use the d3.js version 4 library. No other libraries are allowed.**

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Layouts

- At least three different D3 layouts must be used in a **single** dashboard.
- These should include:
 - a) A scatter plot, or D3 “Stack” or “pie” **and**
 - b) A relational/hierarchical layout
e.g. Tree, cluster, pack, partition, treemap, chord, or bundle.

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Interaction

- There must be interaction between all three layouts in response to user interaction.
- Interactions should include changes to the number of data points displayed.
- Interactions between layouts (L1-3), must occur in all directions (L1 to L2&3, L2 to L1&3, and L3 to L1&2)
- Interactions should be intuitive to the user.
- Transitions **must** be used to make changes to data displayed **obvious**

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User Types

- A single application should be designed that can cater for three different classes as specified later in the slides
- Users should be able to indicate which type of user they are, through a simple button interface.
- Switching between user 'types' should be performed by transitions that allow the user to easily understand the differences between each of the user interfaces.

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User Types

- These 3 choices should be implemented using different content and CSS & SVG style classes.
- The application should be able to smoothly transition between these different modes of operation
- The report should include the review and a critical reflection on the choice of the 3 styles and their implementation.

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User documentation

- A 'graphical user manual' should be provided.
- This should contain lots of screen shots and illustrate
 - all the possible interactions, and
 - example transitions
 - (note you may want to annotate your screen shots with arrows etc. to indicate interactions and transitions)

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Design & documentation

- The source code must be modular
 - i.e. divided into appropriate files to allow for easy development and reuse,
 - a module will normally be represented by a single source file **and use information hiding techniques**
- The overall, or top-level, design should be documented in your report.

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Design documentation

- Each source file should have a header describing:
 - Author
 - Date
 - References (if any)
 - Overall function of the code
 - Usage (a brief description of public methods, properties, and events)
 - The percentage of code written by the student 'author'
 - The percentage of code taken from course examples

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Source code list

- A list of source code files **MUST** be provided that details the % contribution to each source file by the student

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Data

The data will comprise REF 2014 data, additional data about the learning providers (universities & other organisations) and other relevant publically available data

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Data

- These will be provided in CSV format
- They will comprise textual, relational and quantitative data.

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REF2014:

2014 Research Excellence Framework (REF)

- REF 2014 is a quality assessment of UK universities' research comprising:
 - 154 UK institutions
 - 36 subject-based units of assessment (UOAs)
 - 4 profiles (Outputs, Impact, Environment, Overall)
 - 4 starred quality levels
- See <http://www.ref.ac.uk/results/intro/> for more information

Main REF 2014 data format

Institution code (UKPRN)
Institution name
Institution sort order
Main panel
Unit of assessment number
Unit of assessment name
Multiple submission letter
Multiple submission name
Joint submission
Profile
FTE Category A staff submitted
4*
3*
2*
1*
unclassified

Profile	FTE	Category				unclassified
	A staff	4*	3*	2*	1*	
Outputs	27.7	12.1	53.8	27.5	6.6	0
Impact	27.7	40	60	0	0	0
Environment	27.7	50	50	0	0	0
Overall	27.7	23	55	18	4	0

Learning Providers' Data Fields

Field	Example
UKPRN	10008640
PROVIDER_NAME	FALMOUTH UNIVERSITY
VIEW_NAME	University College Falmouth
SORT_NAME	Falmouth, University College
ALIAS	
FLAT_NAME_NUMBER	
BUILDING_NAME_NUMBER	Woodlane Campus
LOCALITY	
STREET_NAME	Woodlane
TOWN	Falmouth
POSTCODE	TR11 4RH
WEBSITE_URL	http://www.falmouth.ac.uk/
WIKIPEDIA_URL	http://en.wikipedia.org/wiki/University_College_Falmouth
GROUPS	
LONGITUDE	-5.070901
LATITUDE	50.149168
EASTING	180711
NORTHING	32196
GTR_ID	E84FC550-A4CC-4B98-A6F9-D15A33829D83
HESA_ID	17

Gateway to Research ID

Other Data

- You may use other publically available data, but you must clearly identify the source and quote the usage rights
- Examples could include other tables from the REF 2014 site and data from Gateway To Research.

Originality

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Examples of originality

Students are expected to show examples of original contribution. The term 'original' here means something that has not been presented in class or is contained in the course's notes. Examples could include:

- Using d3 layouts and shape generators not in examples
- Adapting or generating new shape generators
- Adapting or generating new layout generators
- Providing new combinations of layouts and shape generators
- Providing novel and imaginative interactions
- Using publically available data not provided as part of this brief
 - But not code!!!!
 - And check usage rights!
- Or simply just surprise us

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2. Graphical User Manual

- This should show all the interactions that you have implemented.
- Use plenty of screenshots and annotate with text and arrows etc.
- If an interaction is not documented in this section then it will not contribute to the mark.
- Highlight original features

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3. Application Design

- This should have five sections
 - 3.1 Design Overview
 - 3.2 Reflection on the use the different Design Patterns that you have used
 - 3.3 Use of interactions, and transitions
 - 3.4 Description of original features
 - 3.5 Design for three different user types

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3.3 Use of interactions and transitions

- This section should describe the above features, as used in your applications, and the rationale behind your decisions for use.

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3.4 Originality

- This section should describe what features you have included in your application that were not presented in the course.

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3.5 Design for three different user types

- This section should contain a description of, and reflection on, how the interfaces have been designed and adapted for each of the three different user types.

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4. Conclusions

- No more than one page
- Subsections to include:
 - The feature of the project that I am most proud of
 - The most interesting aspect of Data Visualisation that I have learned from the project
 - Reflection on any changes to your approach that you would make for the next project

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5. Source code module (file) **list**

- This is a table, which has one row for each of your source code files.
- Column headings of table
 - Source code filename
 - **% contribution by student, % taken from the course or d3 modules.**
 - Source of non-student contribution (if appropriate)

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6. Source code **listings**

- These listings must be readable by Turnitin.
- Each module's code listing should start on a new page and should have an appropriate header as a comment
- The header should include such information as: authors, modification history, the module's purpose or function

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User profiles

Choose 3 from the following 5 types:

- University Researchers
- University management
- Potential Industrial collaborators

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University Researchers

- Including PhDs, Research Associates and Academic staff
- Want:
 - To locate and rank departments in *their* UoA to discover which departments to collaborate with.
 - To understand where the geographical foci of expertise is within *their* UoA
 - To rank a given set of universities as to their general research capabilities when applying for jobs at these universities.

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University management

- Want:
 - Easy comparison of their university's overall performance with 'average', 'upper' and 'lower-quartile' university performance.
 - To understand, on a *per UoA basis*, as to how each of *their university's* UoA have performed relatively against other universities'
 - To understand the strengths and weaknesses of their own UoA.

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Potential Industrial Collaborators

- Want:
 - To locate expert UoA in the their geographical area
 - To understand the scale of these activities
 - To understand what their particular local universities are good at.
 - To understand where the geographical foci of expertise is within each UoA
 - To be able to locate REF impact studies relevant to their business

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