Data Visualization

Group project

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What to do

- Form a group (ideally, 3 members)
- Identify a promising visualization project
- Identify dataset(s) to use
- Write a project proposal
- Implement your project: a **web-based interactive visualization(s) in a dashboard**. Your web-based visualizations can be implemented using any API or programming language you'd like as long as it runs in modern browsers.

The project deliverables include

1. a public **website** including:

- brief information about the chosen topic visualized
- the interactive data visualization **dashboard**, embedded in the website
- An explainer **video** (ideally, **embedded**) presenting your viz project (examples)
- a **credits** page (where team members and other acknowledgments are listed)

The project deliverables include

2. a **video** which is a screen-cast with narration showing a demonstration of your data visualization project.

- The duration of the video must NOT exceed 2.5 minutes (150 seconds). Tips regarding video length.

- You can use any screencast tool of your choice (Camtasia, OBS Studio, Windows logo key ⊞+G, etc.).

- Upload the video to an online video-platform such as YouTube, Vimeo, Twitch, and **embed** it into your project web page.

Group project **proposal**

- The cover page for a proposal should include the title, a 50-word abstract of the project, and a list of the participants

- The proposal should clearly and specifically state:

  - the aims of the project

  - the target audience

  - explain the significance of the work (with particular emphasis on the visual data science challenges of the project)

  - the dataset(s) considered

- The total length of the proposal should not be more than 2 pages.

# Group project **plan** (indicative points to keep in mind)

- **Basic Info.** The project title, your names, e-mail addresses, a link to the project URL.

- **Background and Motivation.** Discuss your motivations and reasons for choosing this project, especially any background or research interests that may have influenced your decision.

- **Related Work.** Anything that inspired you, such as a paper, a web site, visualizations we discussed in class, etc.

- **Project Objectives and Goals.** Provide the primary questions you are trying to answer with your visualization. What would you like to learn and accomplish? List the benefits.

- **Tasks** Consider which data manipulations (sort, filter,..) and visual manipulations (zoom, selection,…) you want to implement and how these support the goals.

- **Data.** From where and how are you collecting your data? Provide a link to your data sources.

- **Data Processing.** Do you expect to do substantial data cleanup? What quantities do you plan to derive from your data? How will data processing be implemented?

- **Visualization Design.** How will you display your data? Provide some general ideas that you have for the visualization design. Develop prototype designs for your visualization. Create one final design that incorporates the best of your designs. Describe your designs and justify your choices of visual encodings. We recommend you use the Five Design Sheet Methodology.

- **Must-Have Features.** List the features without which you would consider your project to be a failure.

- **Optional Features.** List the features which you consider to be nice to have, but not critical.

- **Project Schedule.** Make sure that you plan your work so that you can avoid a big rush right before the final project deadline, and delegate different modules and responsibilities among your team members.
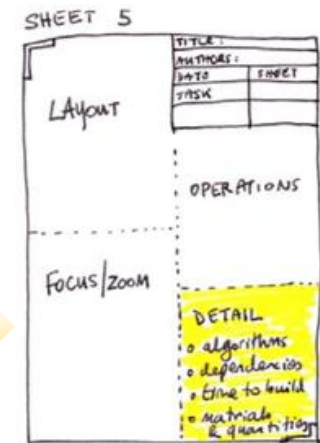
The Five Design-Sheet (FdS) approach

- ▪ Sheet 1 : Brainstorm

- ▪ Sheet 2/3/4: Initial designs
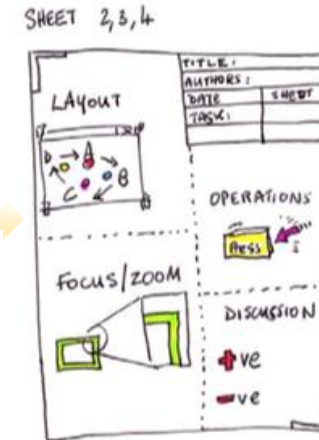
- ▪ Sheet 5: Realization design

- ▪ http://fds.design/ & http://pdritsos.com/projects/FDS/

- ▪ Roberts, J. C., Headleand, C., & Ritsos, P. D. (2016). Sketching Designs Using the Five Design-Sheet Methodology. *IEEE Transactions on Visualization and Computer Graphics, 22*(1), 419–428. https://doi.org/10.1109/TVCG.2015.2467271

- ▪ http://fds.design/wp-content/uploads/2015/10/fds-presentation-final-ieeevis2015.pdf & video

Examples of group projects (U. of Utah, 2017-2018)

- Arctic Explorer Project Video
- Call of Data Project Website | Project Video
- Income Inequality in the United States Website | Video
- Crime Landscape of Salt Lake City Website | Video
- Taxi Rides in NYC Project Website | Project Video
- NBAGameTrackerVis Project Video
- Visualizing Error in Material Informatics Website | Video
- Oil & Gas Geochemical Data Visualization to Aid Exploration Project Website | Project Video
- Trade Wars Project Website | Project Video
- Visualizing Flight Punctuality in the United States Website | Video
- A Mirror of History Project Website | Project Video
- Spotify Dashboard Project Website | Project Video

- Visualizing claims data to identify evidence of opioid abuse video
- Analytical tool for assessing social services, demographics and crime data in Englewood https://youtu.be/_2-V45lHqkM
- Visualizing Individual or Collective Movements in Animals https://www.youtube.com/watch?v=VtXyYVkZMa4
- Visualizing the Longitudinal Impact of Cancer Center Funding Patterns on State Cancer Rates Project video
- Longitudinal Variability of Usage of Cigarettes and e-Cigarettes and Mood Changes Associated at Individual Level Project video
- Visualization of trajectories of molecular data in a capillary setting https://youtu.be/7ZWMIdOnlG8
- Visualizing UMLS Knowledge Sources Project video

Final Group Projects (M126 - NKUA)

https://tinyurl.com/m126-projects

M126 - Data Visualization group project grading rubric

evaluation criteria	subcriteria
1. Effective communication	
	1.1 Clarity of the message: Intended message is communicated clearly to the intended audience(s)
clear presentation of results through visualization, appropriate use of	1.2 Independent message: Visualization tells a story with limited (or no) support from other elements
representations, ability to make comparisons, visualization tells a story	1.3 Fair representation: Data are accurately represented without distortion
with limited (or no) support from other elements, etc.	1.4 Show causality: speak to cause and effect
	1.5 Integration of evidence (where possible, unify annotations, etc.)
	1.6 Appropriateness of the graphs for the data: appropriate use of representations for data types
	1.7 Ability to make wise comparisons (the heart of analytics)
	1.8 Use of multi-variate data (don't dumb down your audience)
	1.9 Statistical Correctness
	1.10 Dashboard (overall): whether graphs work in tandem
2. Interactivity	
appropriate use of interactions elements to allow control of different views	2.1 Chosen interaction elements (sliders, checkboxes, etc.) for filters are appropriate.
	2.2 Selection of number of filters is adequate (how many interactions are provided)
3. Design and aesthetics	
appropriate use of colors/patterns and design grammar	Title, headings, labels: Appropriate size, location, spelling, and content
	Choice of visual: Appropriate for the audience and the message being conveyed
	Design: Aesthetically pleasing, limited clutter, good use of color (contrast)
	Clarity: Appropriate balance of function and design, readability, neatness
4. Creativity and innovation	
choice of topic, new direction / interesting approach to visualizing the data	Choice of topic, Significance of graphic to research: Clearly conveyed by the visualization
	Innovation: Visualization itself is innovative and creative
	Inspiration: Provocative, compelling, and memorable content, message, or design
	Unique approach: Representation of data is bold and original
5. Technical challenge / effort	
amount of work and difficulty	Effort: amount of work/ effort put into the project
	Technical: difficulty, technical challenge, problem solving
6. Final Presentation: Demo & Deliverables	
website (providing context) and video (providing comprehensive explanation/demonstration in under 2.5 minutes).	6.1 Overall presentation, responses to critique, demonstrating understanding of main concepts
	6.2 Quality =effectiveness of website (providing context)
	6.3 Quality =effectiveness of video (providing comprehensive explanation/demonstration in under 2.5 minutes)

Thank you!

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https://eclass.uoa.gr/courses/DI453/