

Intelligence



Goal: Identify the important decision points in a Visual Analytics system and assign their priorities

Deliverable: An inventory of decision points and their priorities

1. What is the context of use for the Visual Analytics system?

Outline the context in which your system is going to be used. Who are the users? What are their goals? What are the available resources and environments that limit their options? Talk to your users for this analysis, but you can also discuss internally with your team for this step.

Users	Goals and Tasks	Resources	Environment
How experienced are the users with different VA methods? Do they have domain knowledge about the dataset?	Are the users trying to explore, confirm, or present certain hypotheses in their analysis?	What are the available hardwares, methods, and manpower?	Is it a visual or coding interface? Are the users under certain pressures and risks?

2. What are the decision points in the analysis?

In the contexts of use you just outlined, brainstorm about decision points where users need to **make a decision between multiple alternatives**. Walk through the users' analytical process in each of the following components and consider where they need to choose between multiple options to move the analysis forward.

	Data	Algorithm	Visualization	Reasoning
Which	Which dataset or which subset of the data to use?	Which algorithm to use to process the data?	Which primary visual encoding to use?	Towards which end should the analysis aim?
How	How to clean and transform the data before they are used?	How to parameterize the algorithms?	How to spec the visualization?	How to compose other decision points together to reach the aim?

3. How much support do users need in each decision point?

Reflect on if support (guidance) is needed for each decision point, and how much support it needs? Rate the decision points with your preferred method and then combine them in the final assessment.

Decision Points	Probability of a "wrong" decision	Impact of getting it "wrong"	Number of potential alternatives	Final Assessment

Design



Goal: Design an evaluation model for the options/alternatives

Deliverable: Criteria as well as the model for the evaluation that generates guidance

1. Choose a decision point, and consider what are the alternatives to choose from?

Estimate the possible number of alternatives that should be considered by the guidance generation process. Think about where these alternatives come from and if they could or should be evaluated.

If possible, list some of these alternatives or how they look like.

2. How to produce the criteria for evaluating the alternatives?

Think about when users are choosing between these alternatives - **what criteria** their decisions are based on? And **on what basis** should these criteria be produced?

Based on:	Full results of each alternative	Partial samples of each alternative	Abstract features of each alternative	Human-rating of each alternative
Produced Criteria:				

3. How to combine the criteria into an evaluation model?

Summarize the **criteria from above**, choose the relevant one(s), and combine them together in a model through conditions, weighted sum, or both. Think about which criteria should be used in which model, how user should change these criteria and conditions/weights.

Which criteria to use? —————> What is the degree of guidance? —————> What is the level of user control?

Consider and list which criteria are clear and relevant.

Should the guidance be provided in orienting, directing, or prescribing degree?

Should the user change the criteria and the conditions/weights? And how should the changes be made?

Choice



Goal: Presenting the alternatives to users to guide their decision

Deliverable: Design of the specification and presentation of the alternatives

1. What information/data about each alternative is relevant for users' choice?

Think about the **evaluation, criteria, and full/partial results of each alternative** that you have produced during the Design stage -- Which one(s) of them are relevant for helping users make their choice?

Data about the alternatives:	Evaluation output	Criteria in the evaluation	Full/partial results to produce the criteria
Data content:			

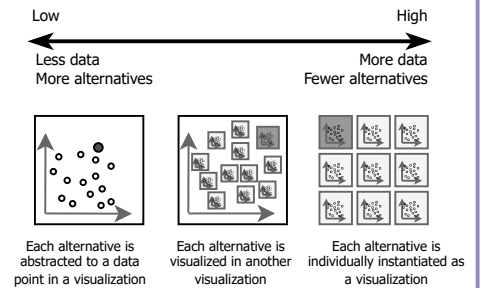
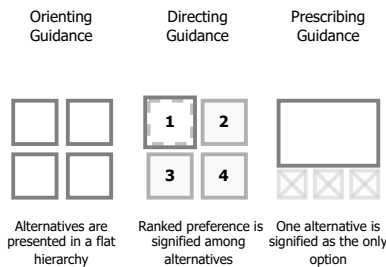
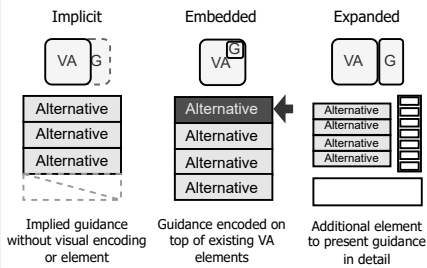
2. How should the information about the alternatives be presented?

Reflect back on the data and structure about the alternatives, brainstorm about how they should be presented. For example - think about **which prominence** works better, how to **signify the guidance**, and **what detail** each alternative should be shown in. Following are some examples as a thinking tool.

Prominence of Guidance

Signification of Guidance

Level of Detail



Draft out your own ideas in detail!

3. How to adapt the guidance to user feedback?

How should different components -- **presence, generation, and presentation**, of the provided guidance adapt to user feedback? Should the adaptation be **implicitly inferred** from user interactions or **directly controlled** by users?

	Guidance Presence	Guidance Generation	Guidance Presentation
Implicitly Inferred			
Directly Controlled			