



# **BLACK BOX SOFTWARE TESTING: INTRODUCTION TO TEST DESIGN:**

## **THE SPECIFICATION ASSIGNMENT**

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These notes are partially based on research that was supported by NSF Grants EIA-0113539 ITR/SY+PE: “Improving the Education of Software Testers” and CCLI-0717613 “Adaptation & Implementation of an Activity-Based Online or Hybrid Course in Software Testing.” Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

# THE ASSIGNMENT

Students were required to:

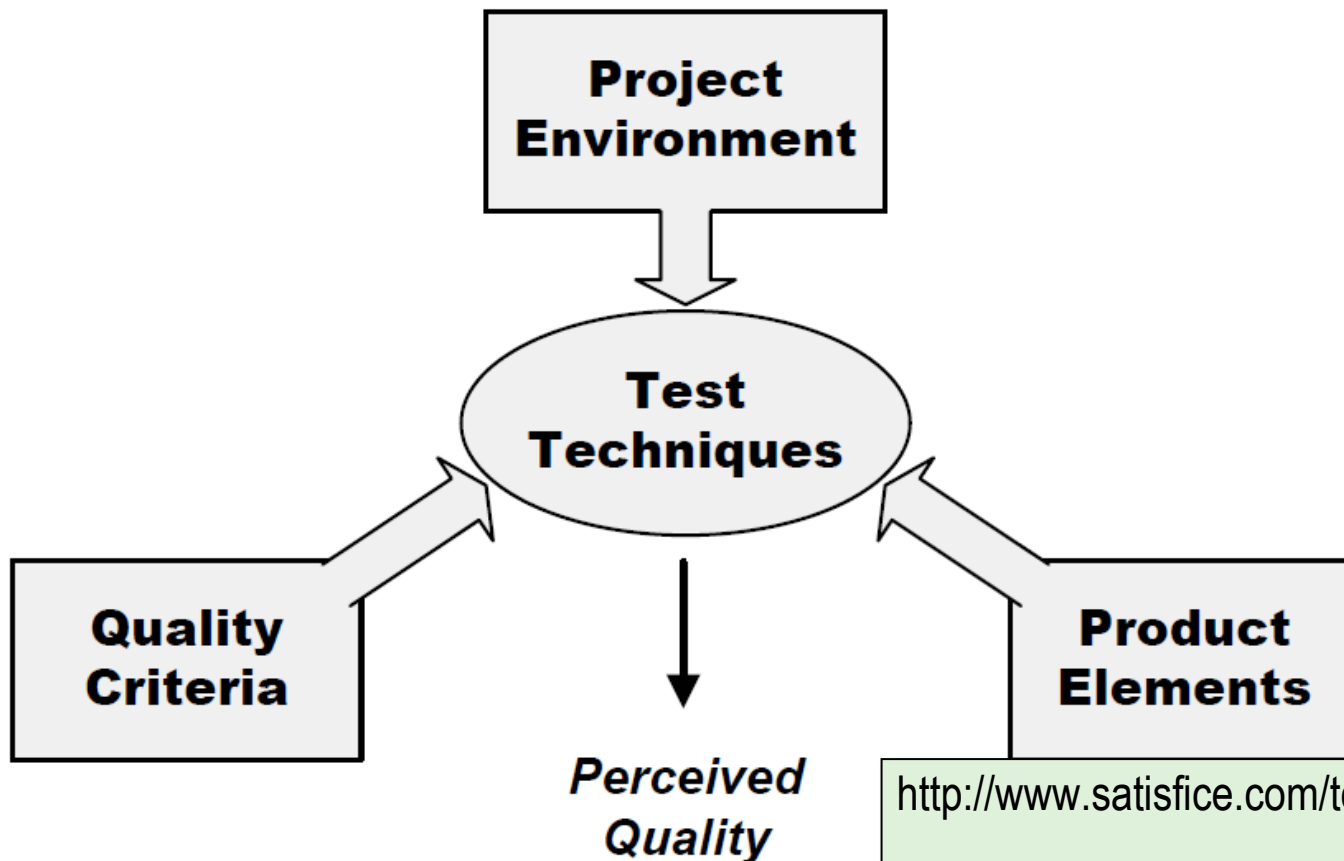
1. Download and install Xmind
2. Create a map of the Heuristic Test Strategy Model
3. Review the documentation / specifications for Google's presentation program (part of googledocs) and sort the content into their map of HTSM.
4. Stop after at least 4 but not more than 6 hours of work.

This lecture illustrates how I would do this task. This task illustrates how I apply active reading skills to complex specifications (doc sets much larger than googledocs).

I wrote many of these slides using a 2010 version of googledocs. Googledocs' design is in flux, so some details will be different when you do the assignment.

I also used the Mind Manager concept mapper. Since then, I've switched to the free version of Xmind, which is what you probably used for the assignment.

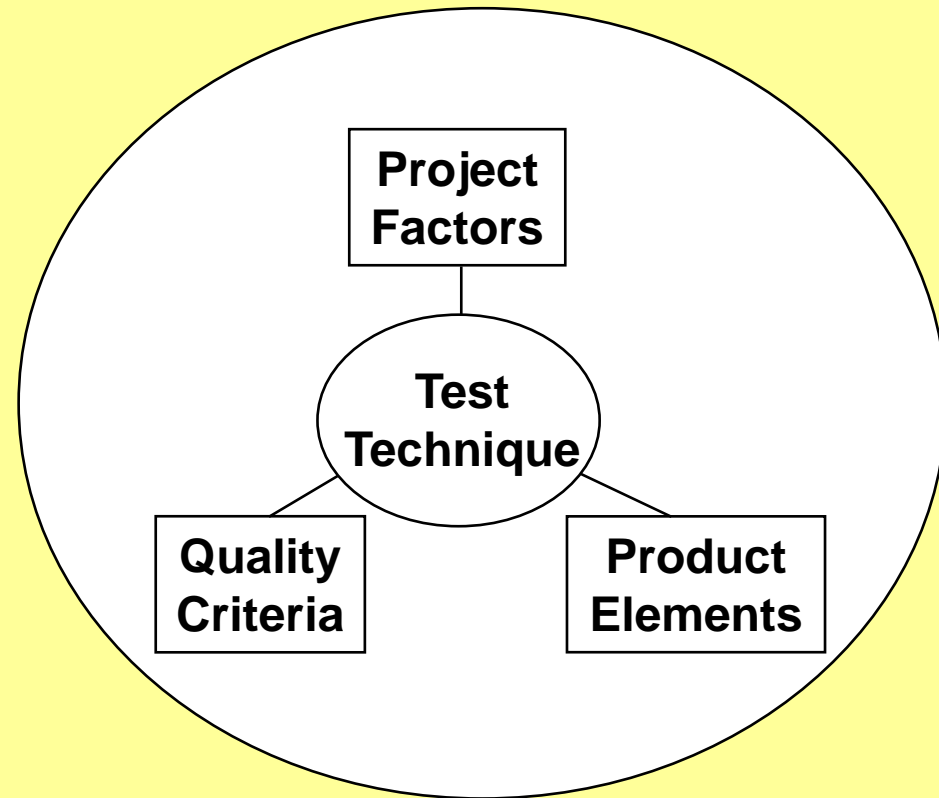
# Heuristic Test Strategy Model



<http://www.satisfice.com/tools/satisfice-tsm-4p.pdf>

# HEURISTIC TEST STRATEGY MODEL

- **Project Factors:** aspects of the project that facilitate or constrain the testing effort.
- **Product Elements:** things you can test.
- **Quality Criteria:** what stakeholders value about the product. Quality criteria are multidimensional, and often incompatible with each other.



From Bach's Heuristic Test Strategy Model

# WHAT'S THIS ABOUT?

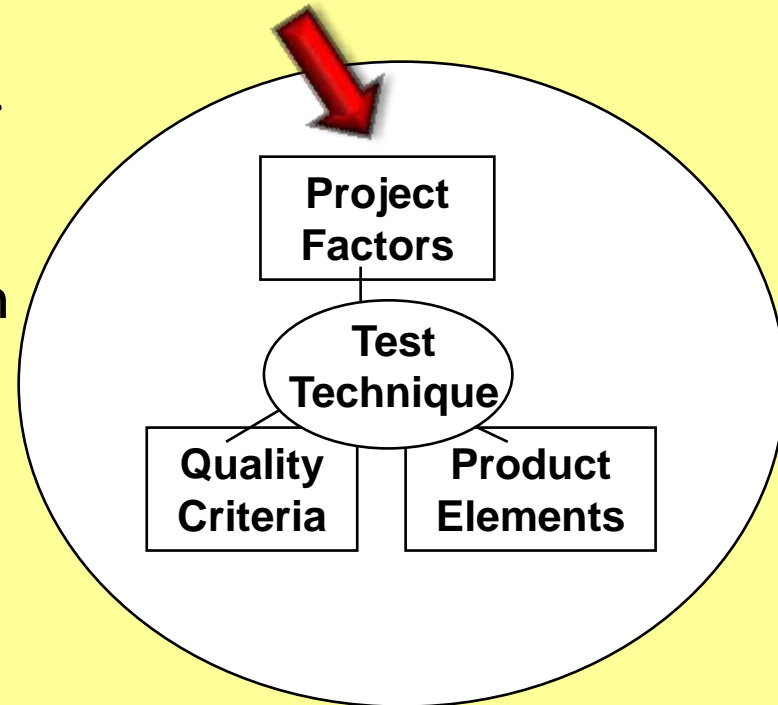
This model provides a structure for:

- Sorting / classifying a complex body of information
  - Taxonomy (“folk taxonomies”)
- Generating test ideas
  - Guide words (Hazops)
    - We’ll talk about this when we cover risk-based testing
- Generating test ideas about the classified information or about combinations of the classified information
  - Generative taxonomy

**Today’s exercise focuses on HTSM as a taxonomy, to help us make sense of complex specifications**

# PROJECT FACTORS

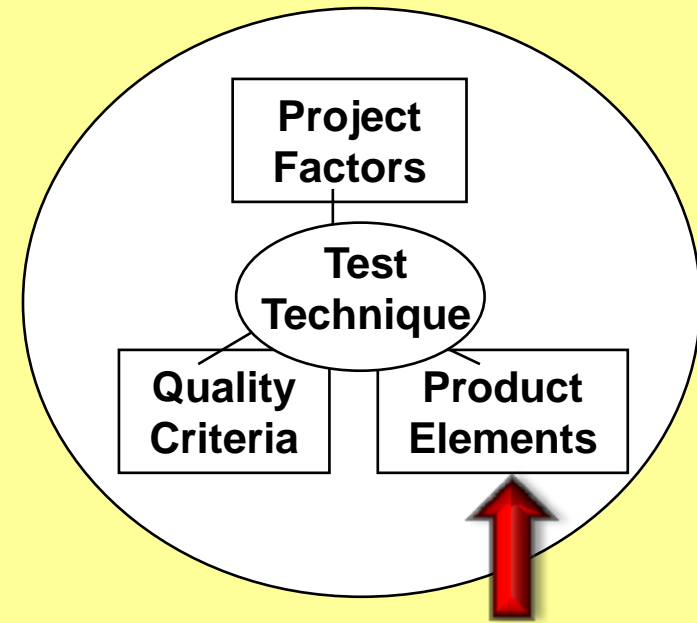
- **Customers:** Any client of the test project.
- **Information:** Information about the product or project is needed for testing.
- **Developer relations:** How you get along with the programmers.
- **Test Team:** Anyone who will perform or support testing
- **Equipment & Tools:** Hardware, software, or documents required to administer testing.
- **Schedule:** Sequence, duration, and synchronization of project events.
- **Test Items:** The product to be tested.
- **Deliverables:** The observable products of the test project.



From Bach's Heuristic  
Test Strategy Model

# PRODUCT ELEMENTS

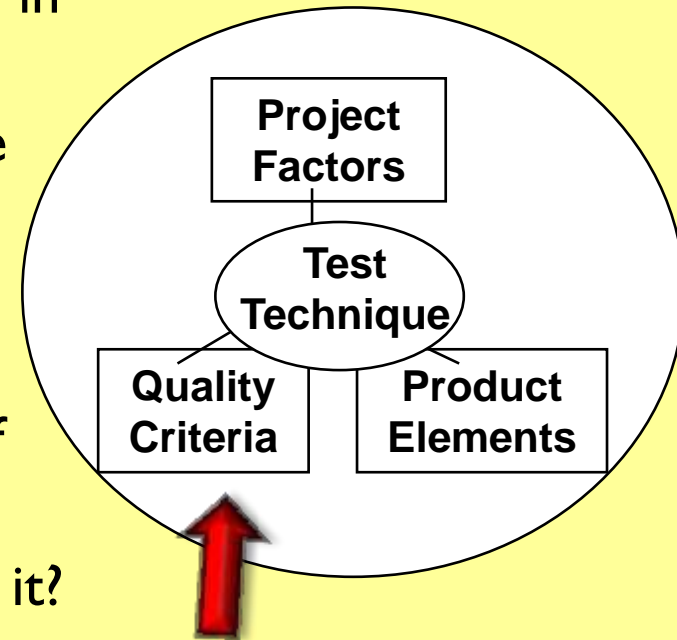
- **Structure:** Everything that comprises the physical product
- **Functions:** Everything the product does
- **Data:** Everything the product processes
- **Platform:** Everything on which the product depends (and that is outside your project)
- **Operations:** How the product will be used
- **Time:** Any relationship between the product and time



From Bach's Heuristic  
Test Strategy Model

# QUALITY CRITERIA: OPERATIONAL CRITERIA

- **Capability:** Can it perform the required functions?
- **Reliability:** Will it work well and resist failure in all required situations?
- **Usability:** How easy is it for a real user to use the product?
- **Security:** How well is the product protected against unauthorized use or intrusion?
- **Scalability:** How well does the deployment of the product scale up or down?
- **Performance:** How speedy and responsive is it?
- **Installability:** How easily can it be installed onto its target platforms?
- **Compatibility:** How well does it work with external components & configurations?

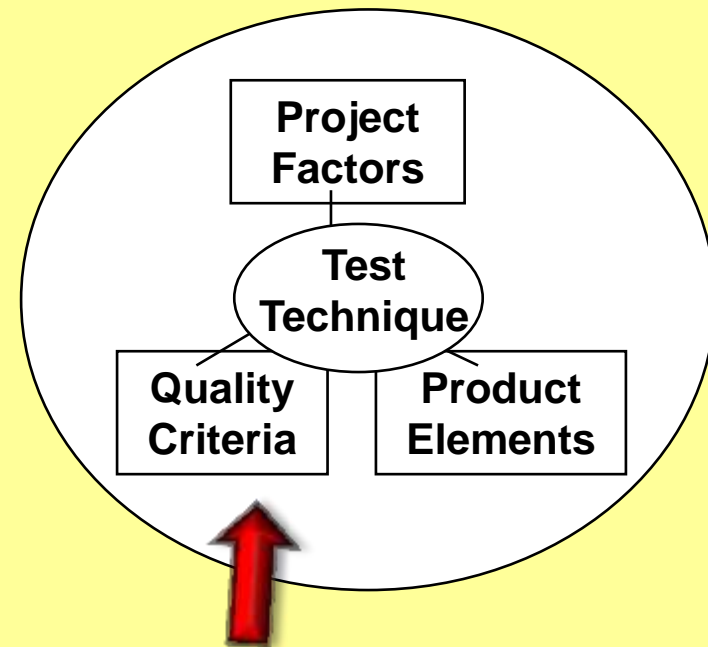


From Bach's Heuristic  
Test Strategy Model



# QUALITY CRITERIA: DEVELOPMENT CRITERIA

- **Supportability:** How economical will it be to provide support to users of the product?
- **Testability:** How effectively can the product be tested?
- **Maintainability:** How economical is it to build, fix or enhance the product?
- **Portability:** How economical will it be to port or reuse the technology elsewhere?
- **Localizability:** How economical will it be to adapt the product for other places?



From Bach's Heuristic  
Test Strategy Model

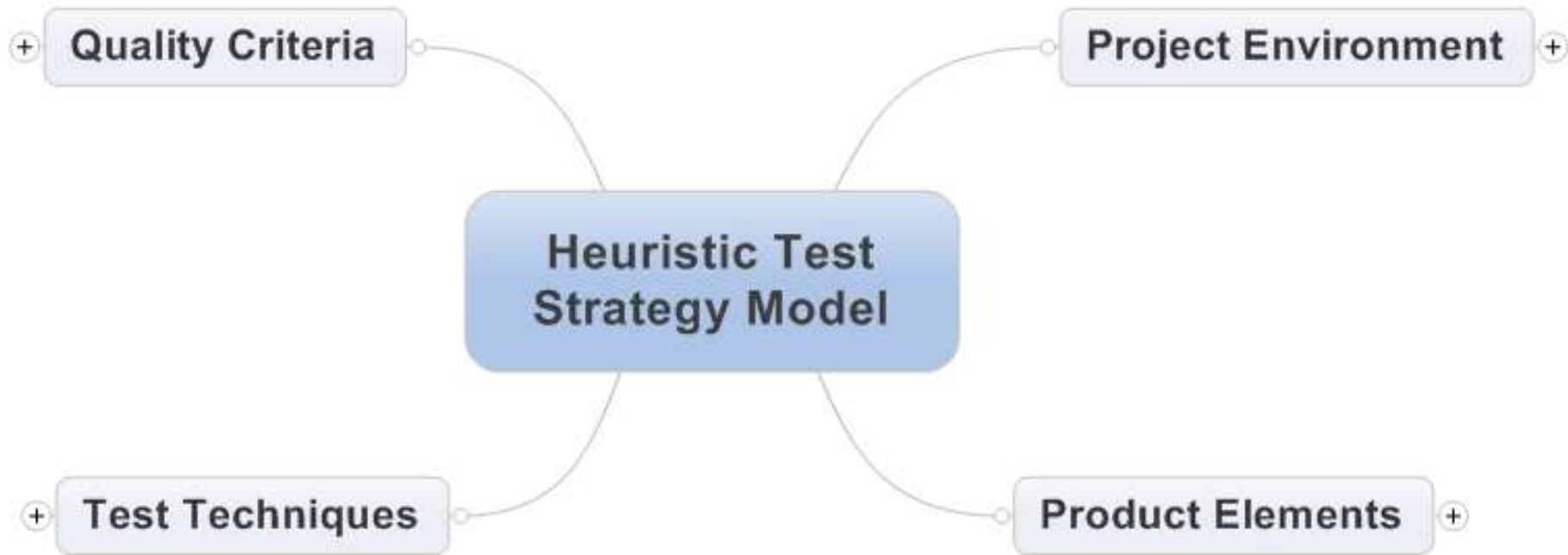
# THE ASSIGNMENT

Your first task was to create your own map of the model

- Doing it yourself gets you familiar with its details
- Customize it as you find useful
- Save this as a “baseline” so you can apply it to other programs

# CREATE A MAP OF THIS MODEL

- XMind, <http://www.xmind.net>
- Mind Manager: <http://www.mindjet.com/index1.html>
- NovaMind: <http://www.novamind.com/>
- Inspiration: <http://inspiration.com/>



# WE CAN CUSTOMIZE THE MODEL:

**Customers:** Any client of the test project.

**Information:** Information about the product or project is needed for testing.

**Developer relations:** How you get along with the programmers.

**Test Team:** Anyone who will perform or support testing

**Equipment & Tools:** Hardware, software, or documents required to administer testing.

**Schedule:** Sequence, duration, and synchronization of project events.

**Test Items:** The product to be tested.

**Deliverables:** The observable products of the test project



# THE MODEL HAS GREATER DEPTH

## Project Environment

*Creating and executing tests is the heart of the test project. However, there are many factors in the project environment that are critical to your decision about what particular tests to create. In each category, below, consider how that factor may help or hinder your test design process. Try to exploit every resource.*

### ☐ **Customers.** *Anyone who is a client of the test project.*

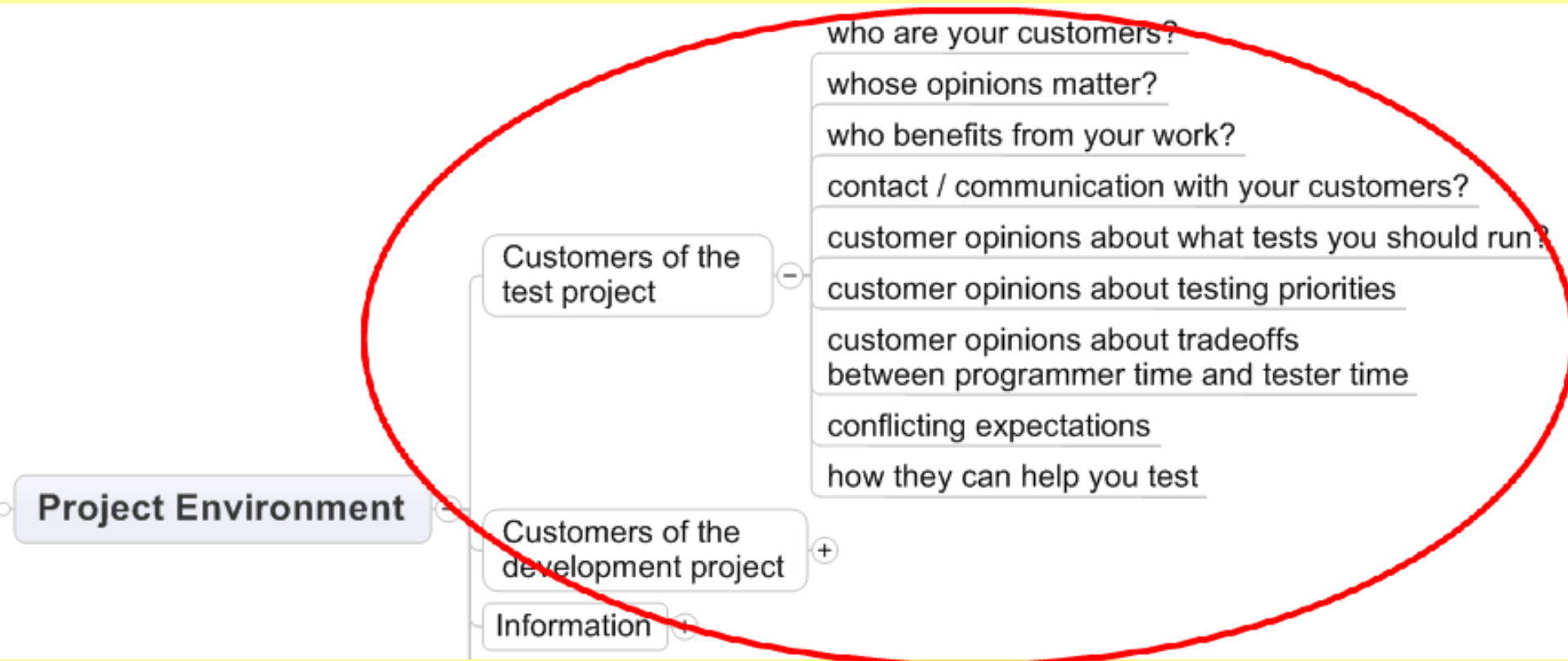
- Do you know who your customers are? Whose opinions matter? Who benefits or suffers from the work you do?
- Do you have contact and communication with your customers? Maybe they can help you test.
- Maybe your customers have strong ideas about what tests you should create and run.
- Maybe they have conflicting expectations. You may have to help identify and resolve those.

### ☐ **Information.** *Information about the product or project that is needed for testing.*

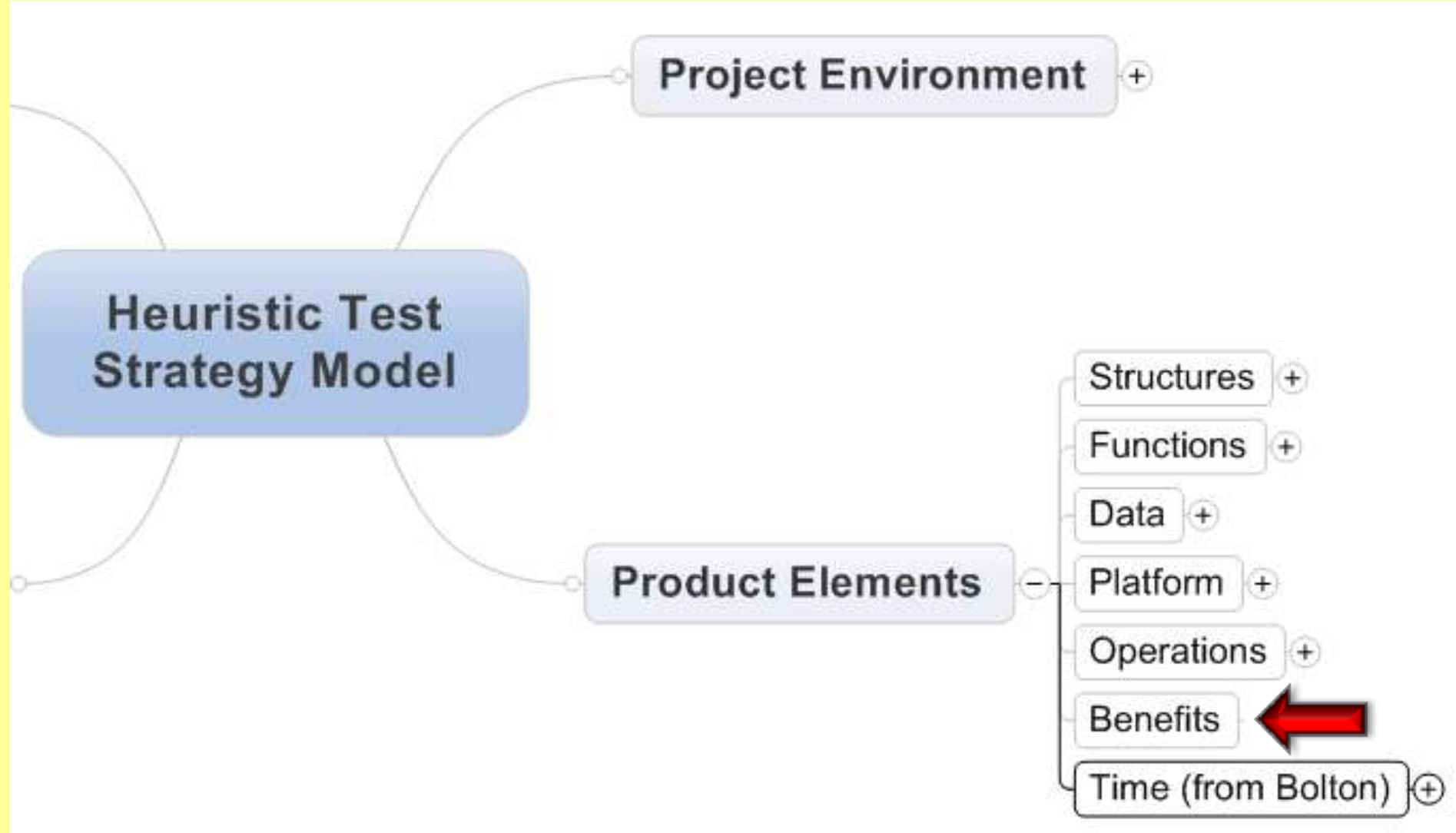
- Are there any engineering documents available? User manuals? Web-based materials?
- Does this product have a history? Old problems that were fixed or deferred? Pattern of customer complaints?
- Do you need to familiarize yourself with the product more, before you will know how to test it?
- Is your information current? How are you apprised of new or changing information?
- Is there any complex or challenging part of the product about which there seems strangely little information?

From Bach's Heuristic  
Test Strategy Model

# SO WE ADD A LEVEL TO THE MAP

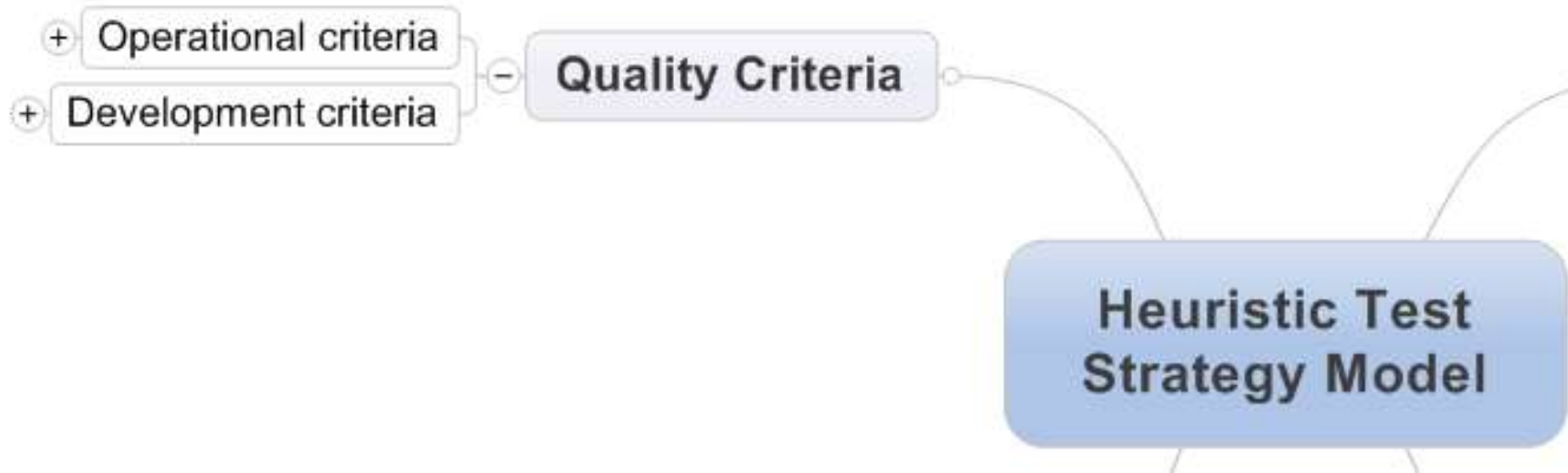


I added Benefits to Product Elements, because this helps me think about scenarios. I also added Mike Bolton's treatment of time and timing.



Quality criteria are particularly prone to variation across contexts:

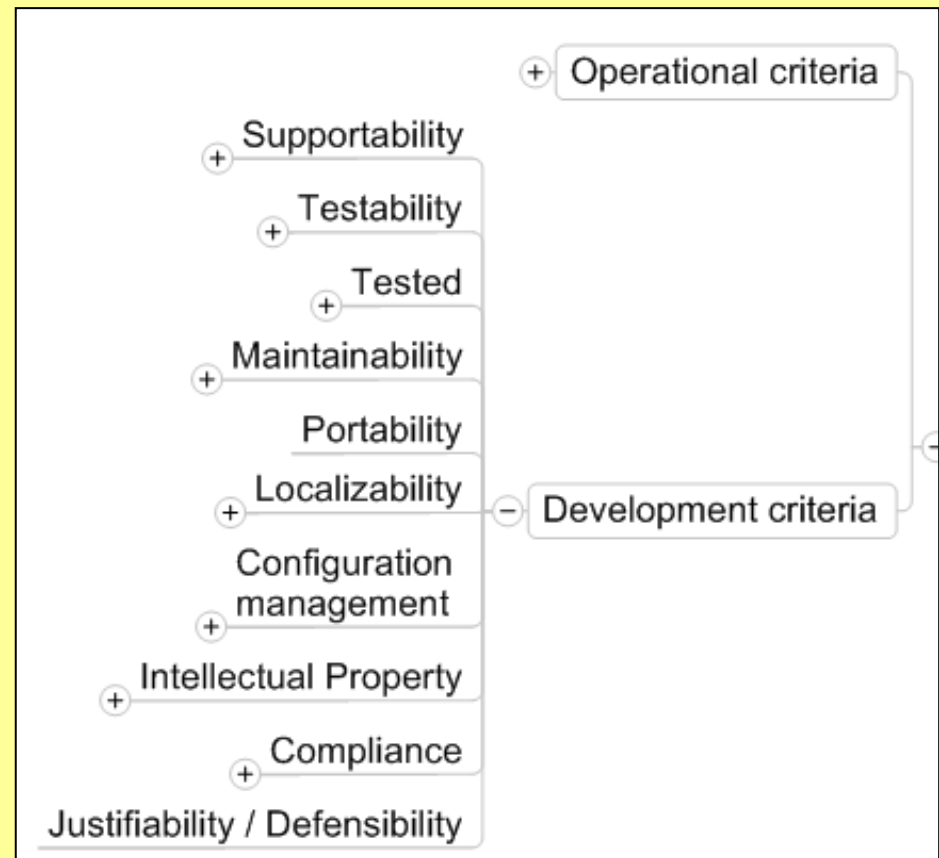
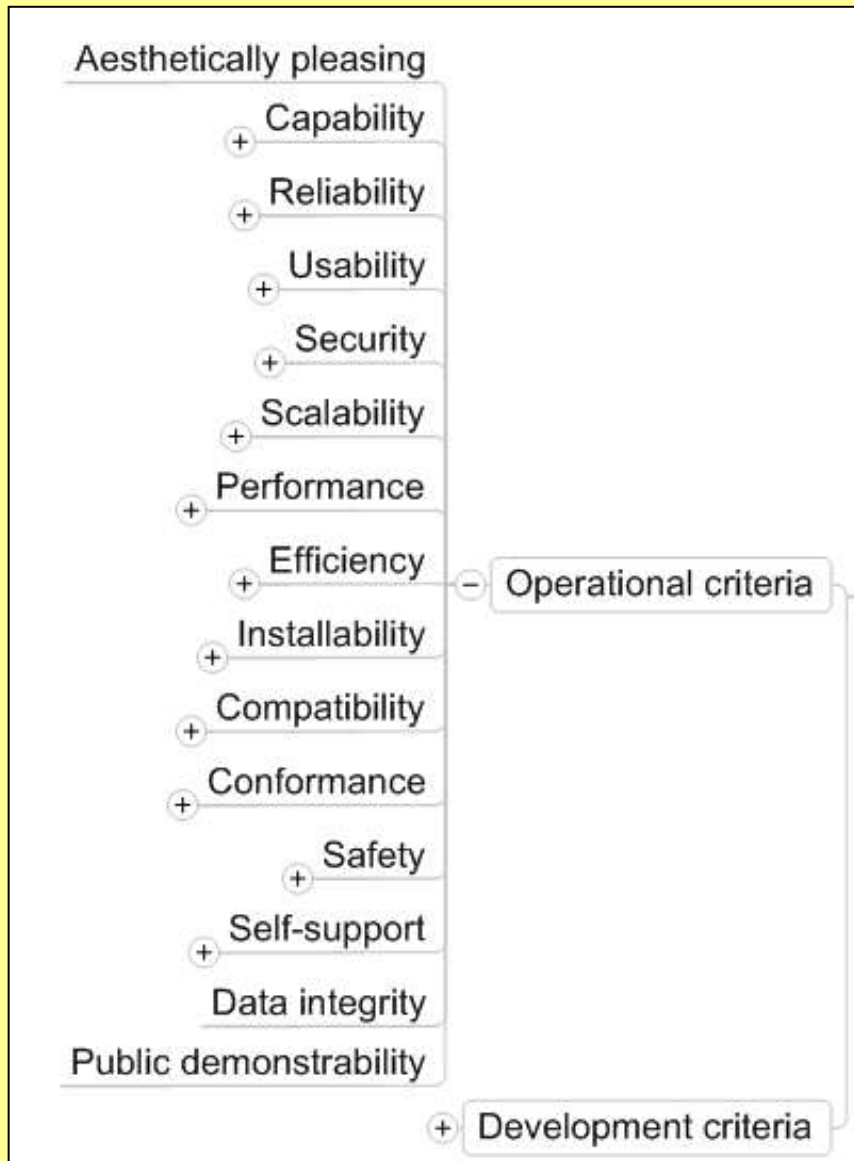
- The more some criterion matters to you, the more finely you will analyze it.





Here's the next level down in my version of the model. It contains all of Bach's categories, but adds a few that are useful to me.

*Most people who work seriously with this model customize it to meet their needs.*



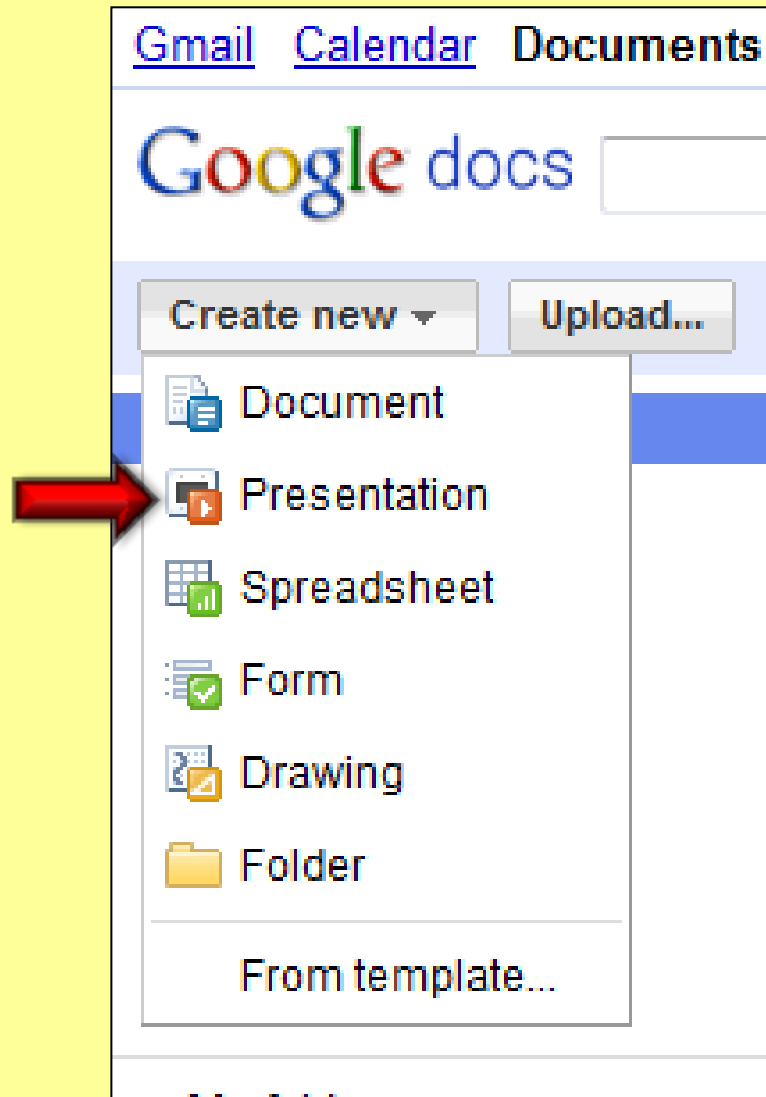
# THE ASSIGNMENT

Your first task was to create your own map of the model

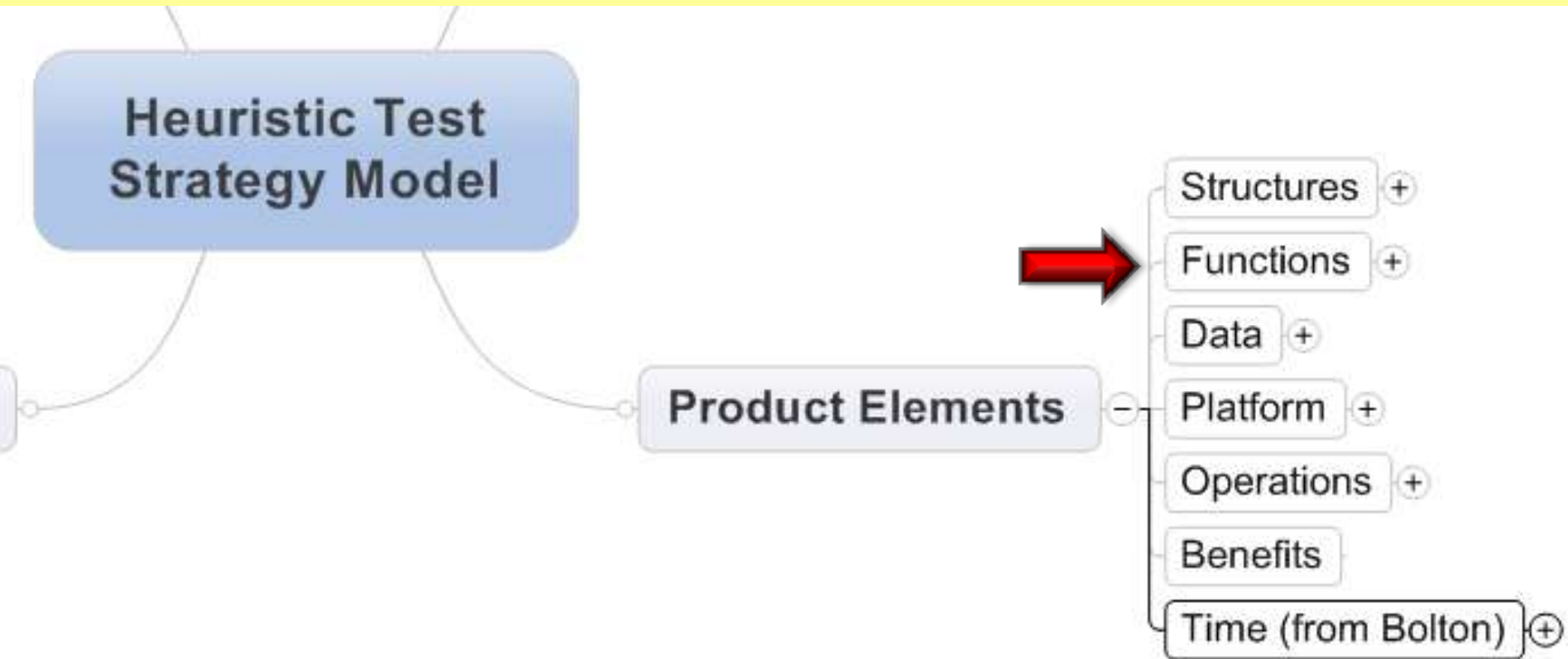
- Doing it yourself gets you familiar with its details
- Customize it as you find useful
- Save this as a “baseline” so you can apply it to other programs

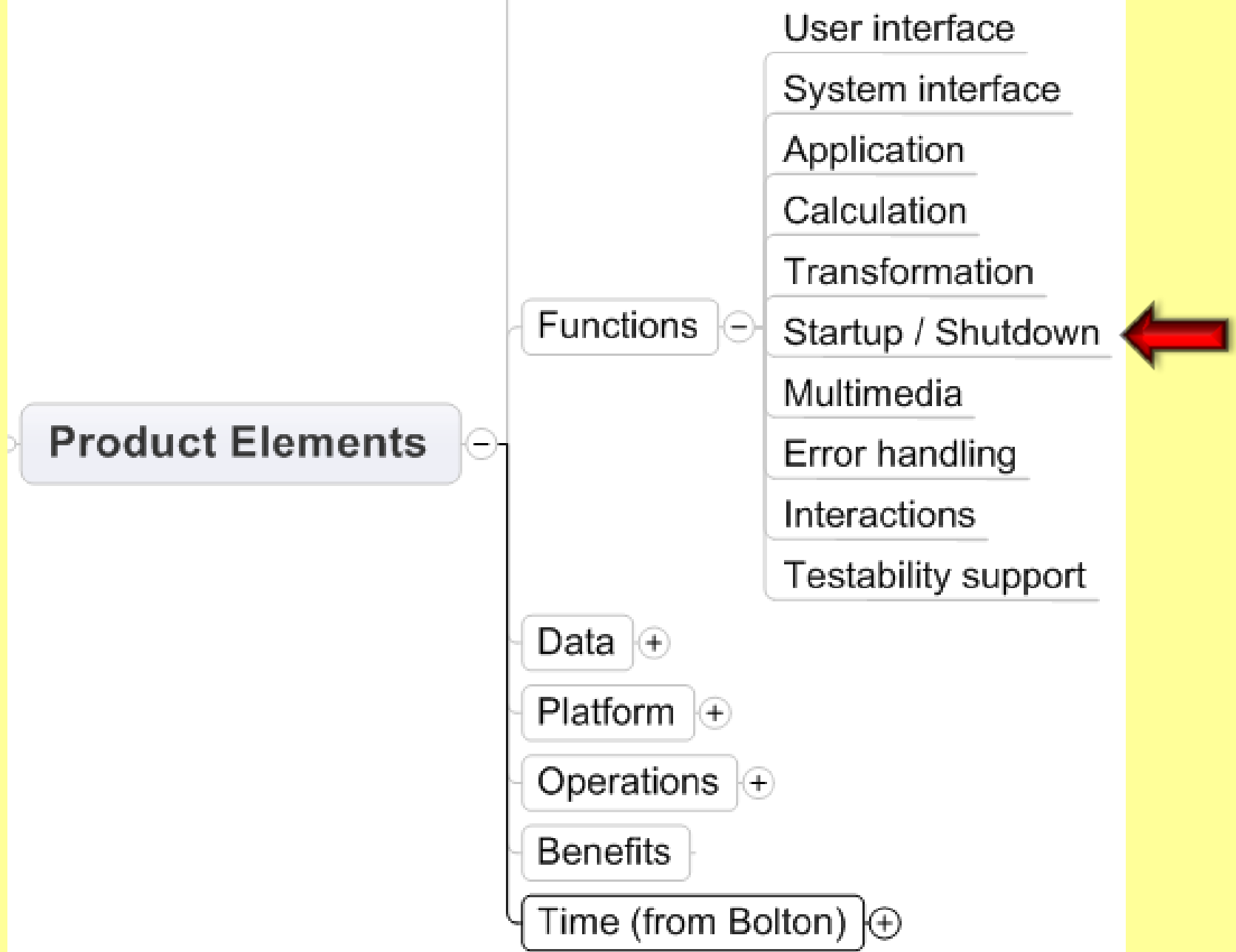
Next task is to apply it to Google Docs and its documentation/specifications

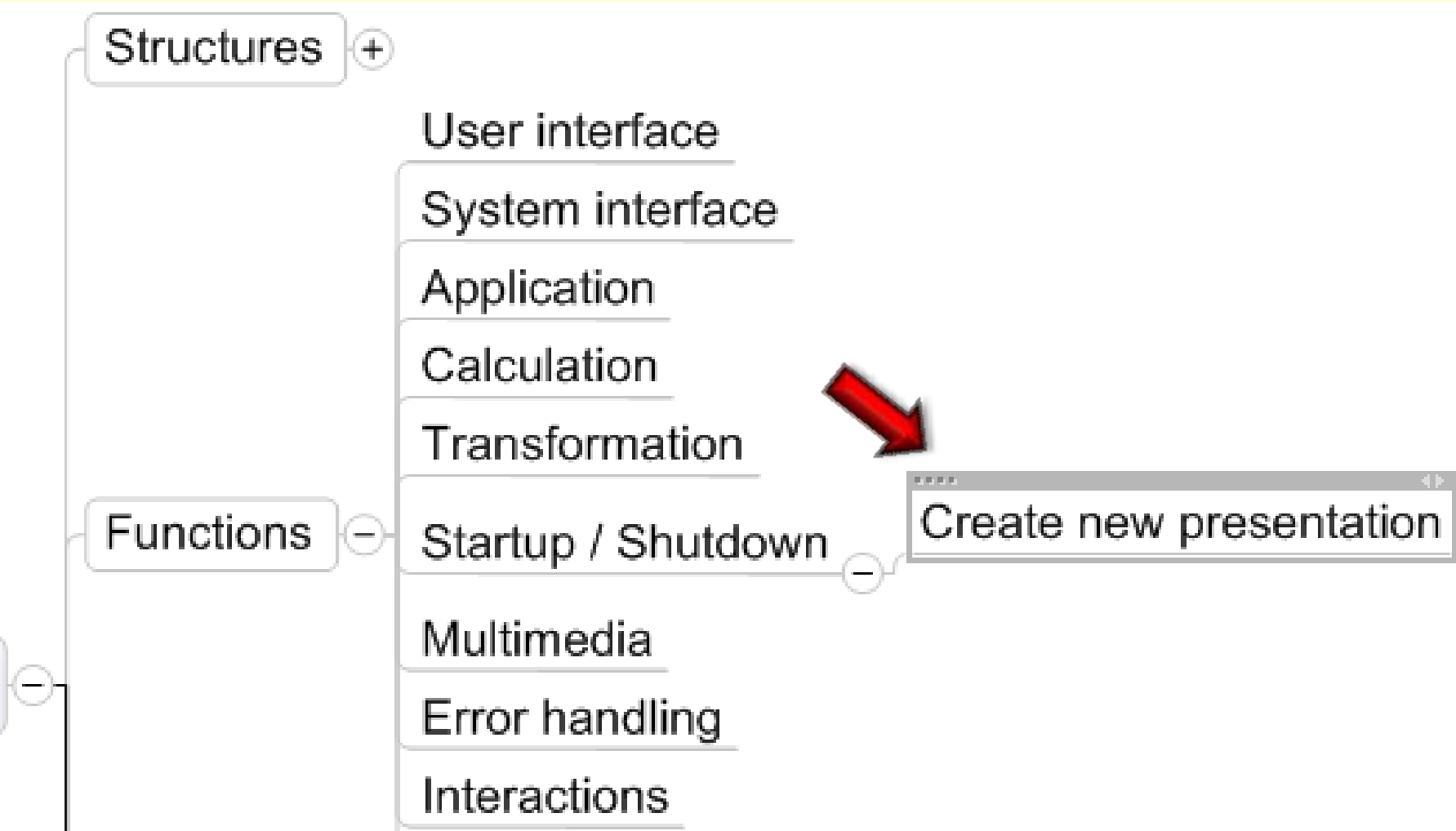
# So let's start with a look at Google Docs



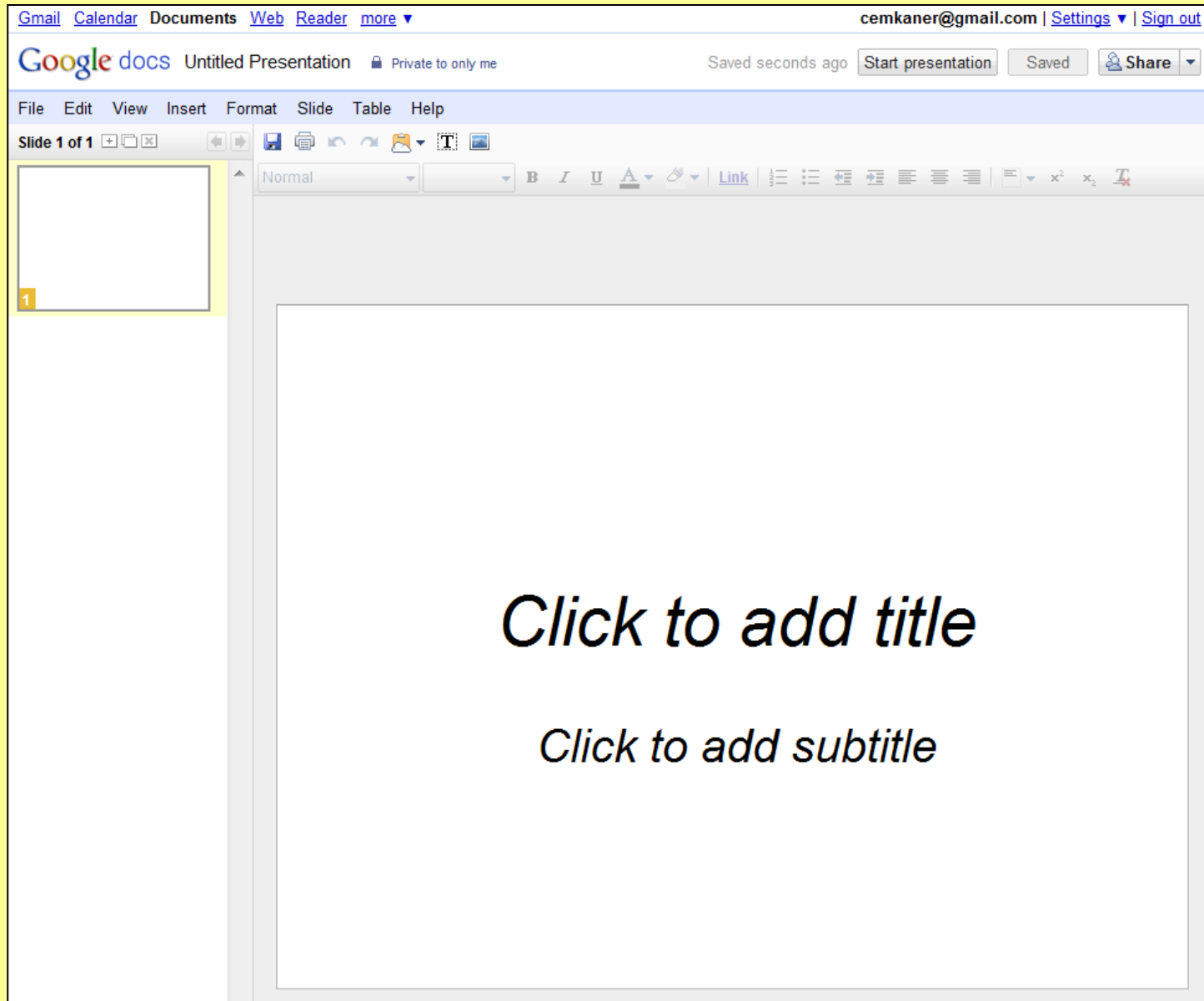
And put this on the map







# Here's the new presentation



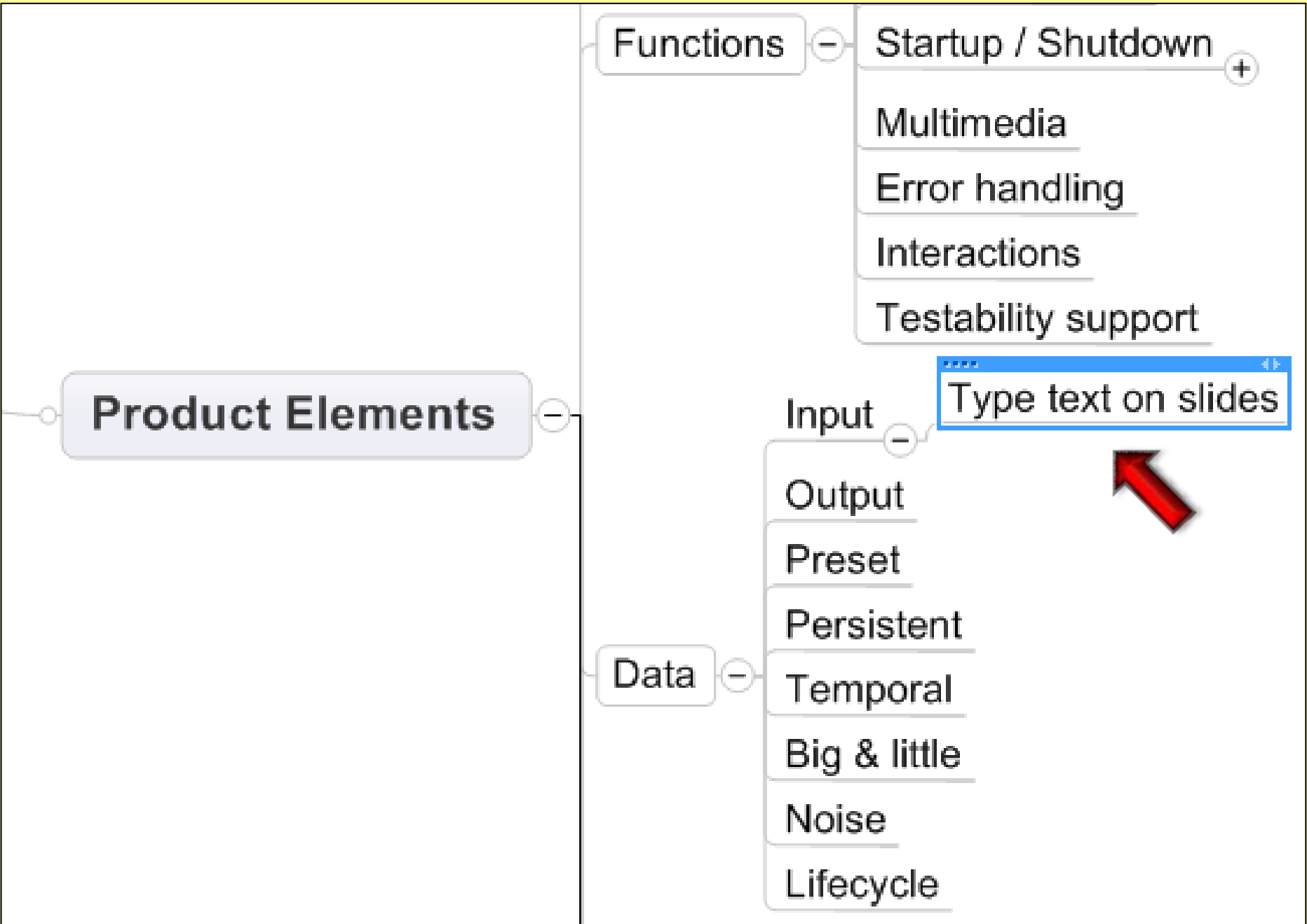
This is my title slide

1 This is my title slide

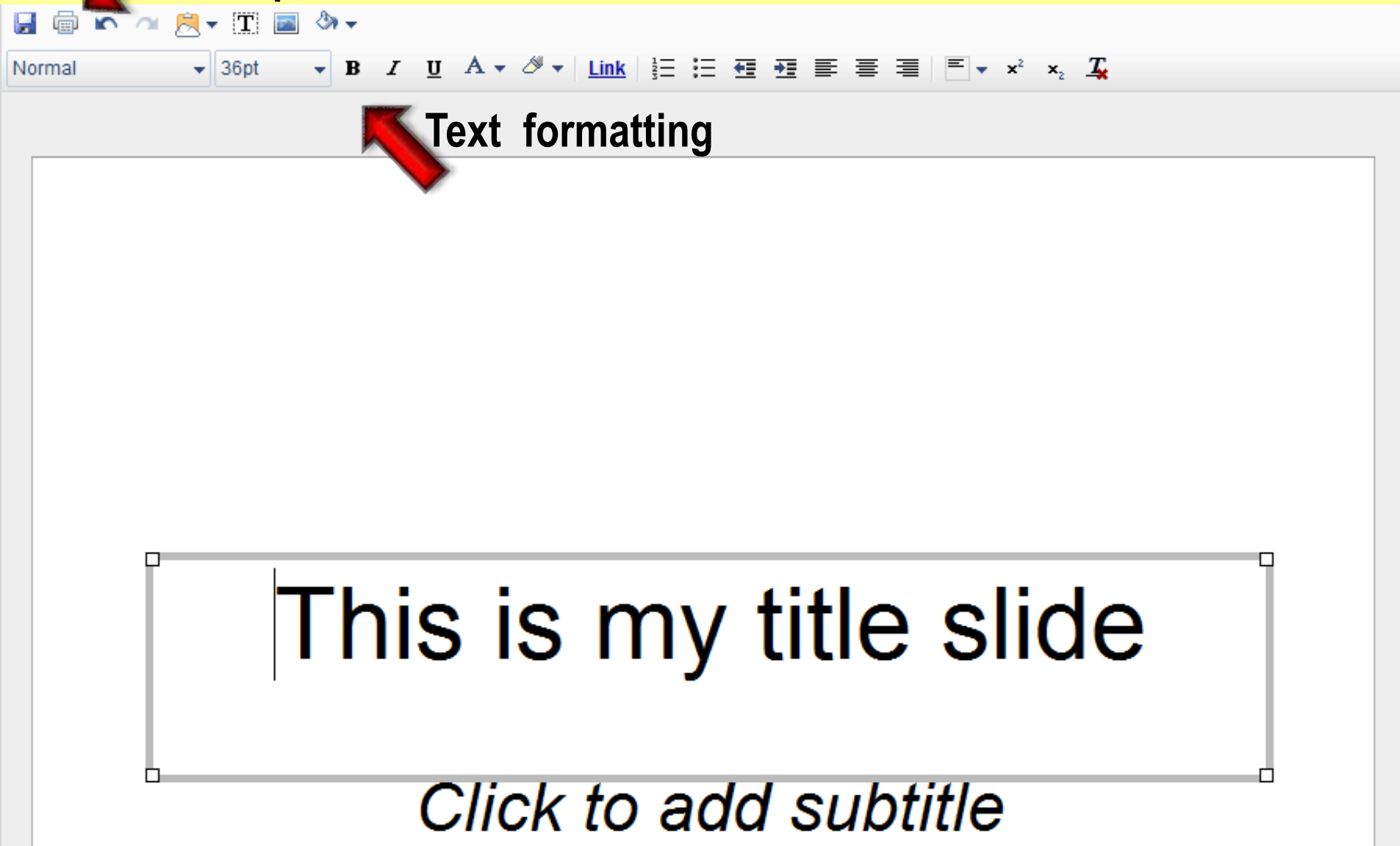
# This is my title slide

*Click to add subtitle*

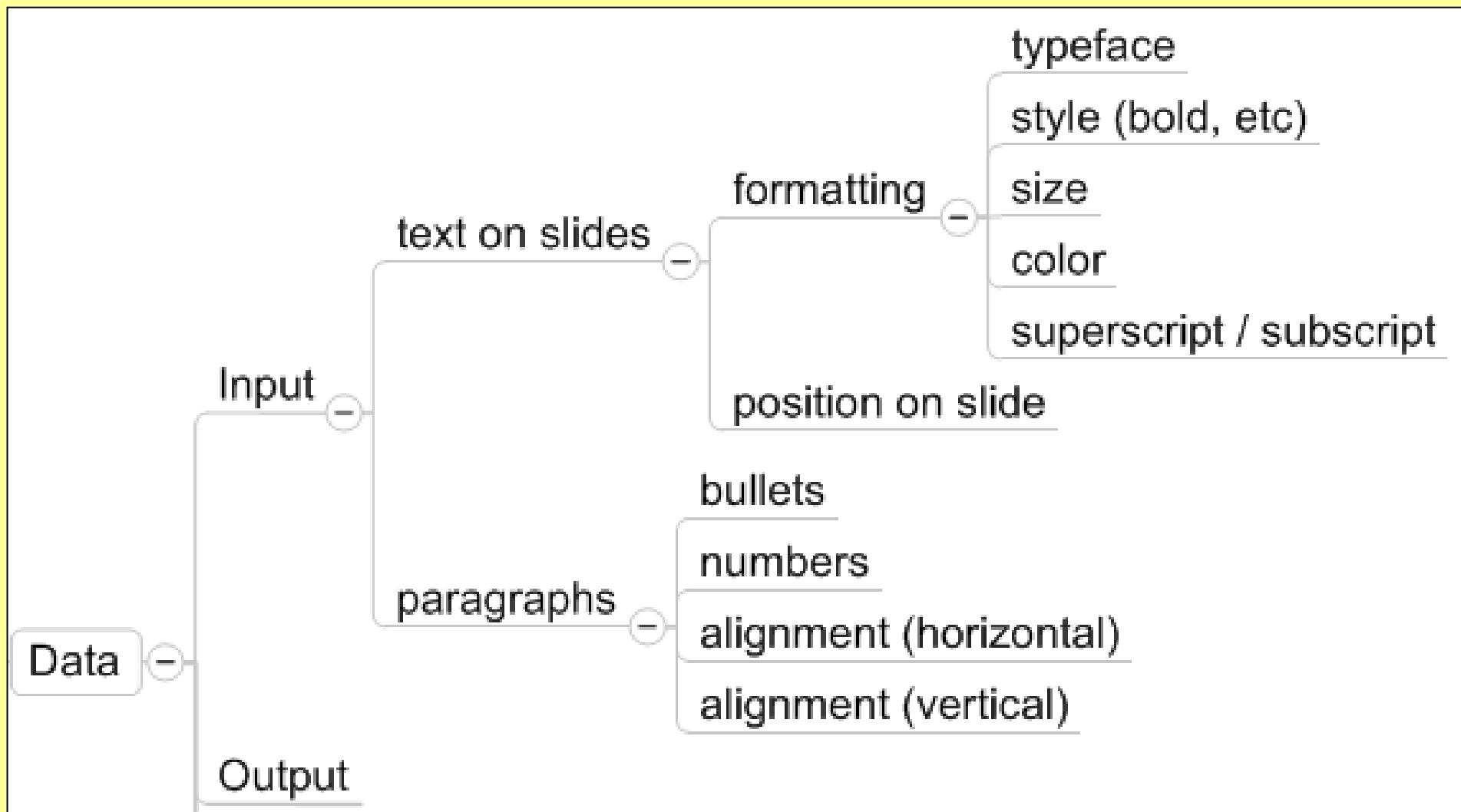




## File operations



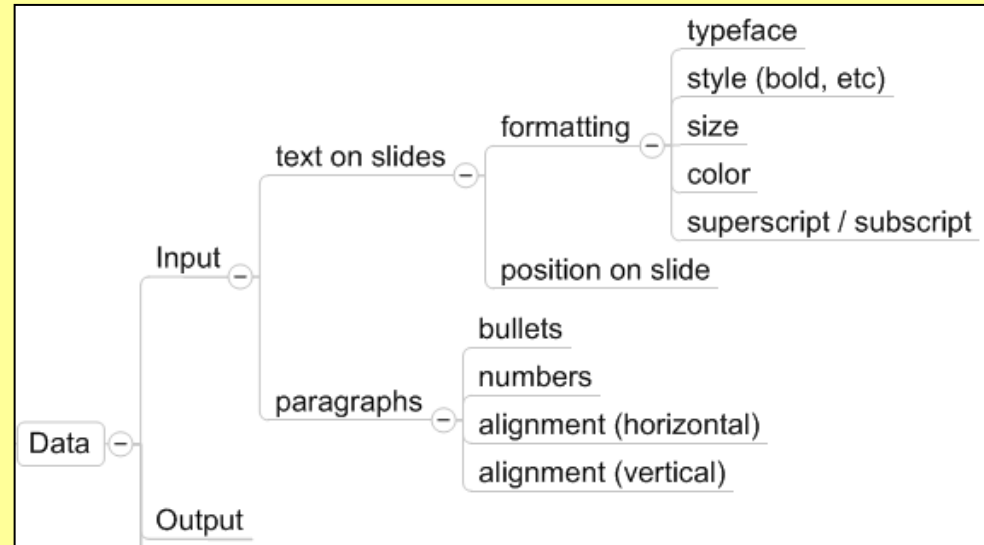
# Text formatting



# DID WE CLASSIFY THESE CORRECTLY?

Shouldn't the formatting commands be treated as part of the user interface?

- **User Interface**: any functions that mediate the exchange of data with the user (e.g. navigation, display, data entry).
- **Input**: any data that is processed by the product.



Either is appropriate, but for this product, formatted text is THE data of the application. So I thought of treating this as data first.

As I work with the model, I can leave these notes here, move them to the UI section, or duplicate them.

# SCIENTIFIC TAXONOMIES VERSUS FOLK TAXONOMIES

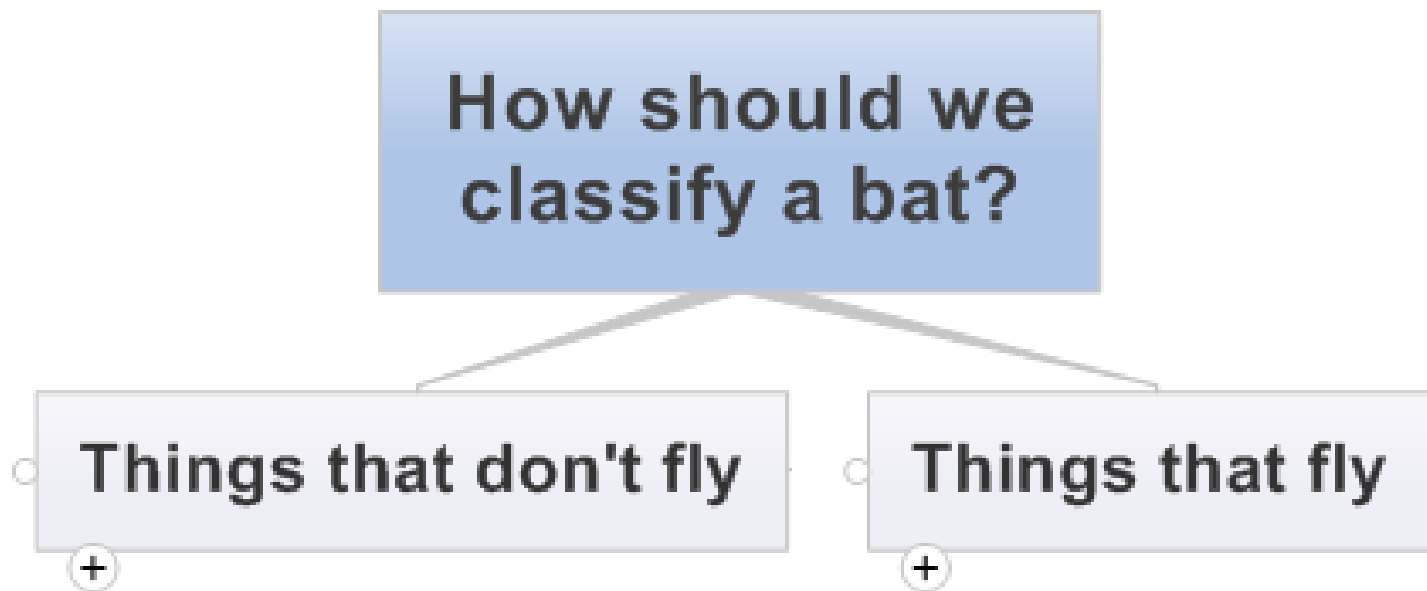
We use taxonomies to classify information

- Scientific taxonomies are carefully constructed over many iterations and permit unambiguous classification (e.g. “what type of plant is this?”). <http://en.wikipedia.org/wiki/Taxonomy>
- Folk taxonomies are less formally constructed but can still be quite useful. [http://en.wikipedia.org/wiki/Folk\\_taxonomy](http://en.wikipedia.org/wiki/Folk_taxonomy)

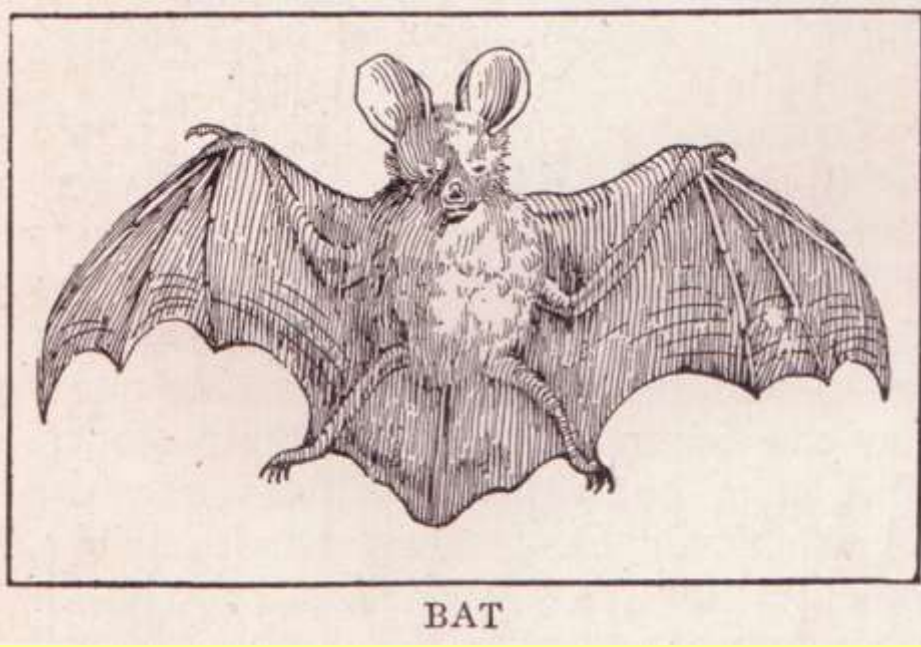
We can also use SOME taxonomies to generate new ideas or things. We call a taxonomy that creates a structure to support generation a *generative taxonomy*. See W.D. Hurley (1989) "A generative taxonomy of application domains based on interaction semantics" at <http://dl.acm.org/citation.cfm?id=75960> and Vijayaraghavan's thesis at [www.testingeducation.org/a/tecrf.pdf](http://www.testingeducation.org/a/tecrf.pdf)

- The Satisfice Model is a generative folk taxonomy
  - We use it to organize complex collections of information
  - We use the organized information to generate test ideas

# IMAGINE CLASSIFYING A BAT USING A FOLK TAXONOMY



# IMAGINE CLASSIFYING A BAT USING A FOLK TAXONOMY



"The Home and School Reference Work, Volume I" by  
The Home and School Education Society, H. M. Dixon,  
<http://www.flickr.com/photos/perpetualplum/4526748388/>

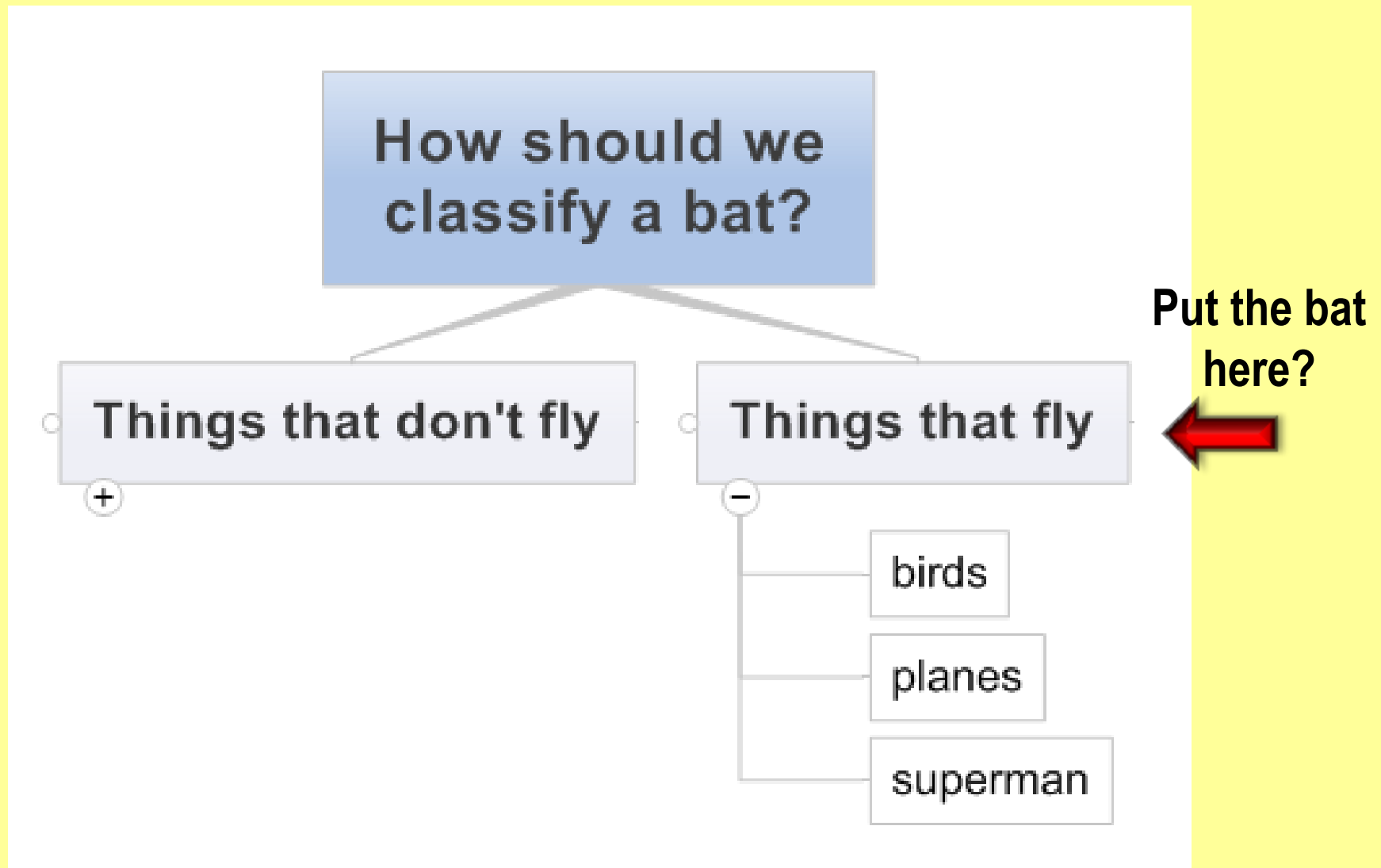
**What should we do with  
something that is  
essentially a flying rat?**

Fruit Bat

<http://www.flickr.com/photos/eggybird/103161513/>



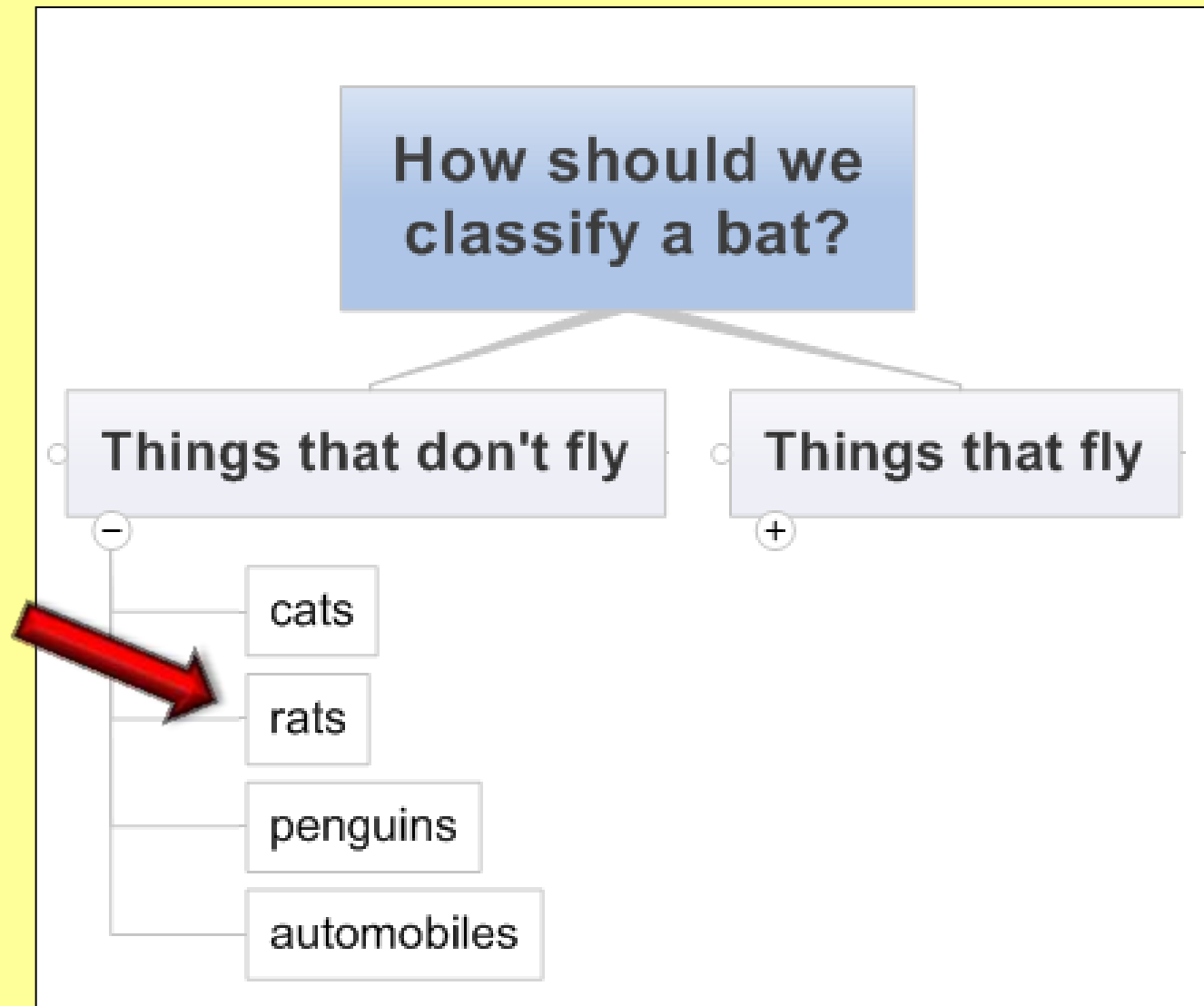
# IMAGINE CLASSIFYING A BAT USING A FOLK TAXONOMY





# IMAGINE CLASSIFYING A BAT USING A FOLK TAXONOMY

What  
about  
here?



# HOW TO CLASSIFY THE BAT?

If we were creating a scientific taxonomy, this ambiguity would tell us to restructure the taxonomy so there would be one and only one place for the bat. We would do research on key variables that might not be readily visible (such as DNA characteristics) that could be the foundation of authoritatively unambiguous classification.

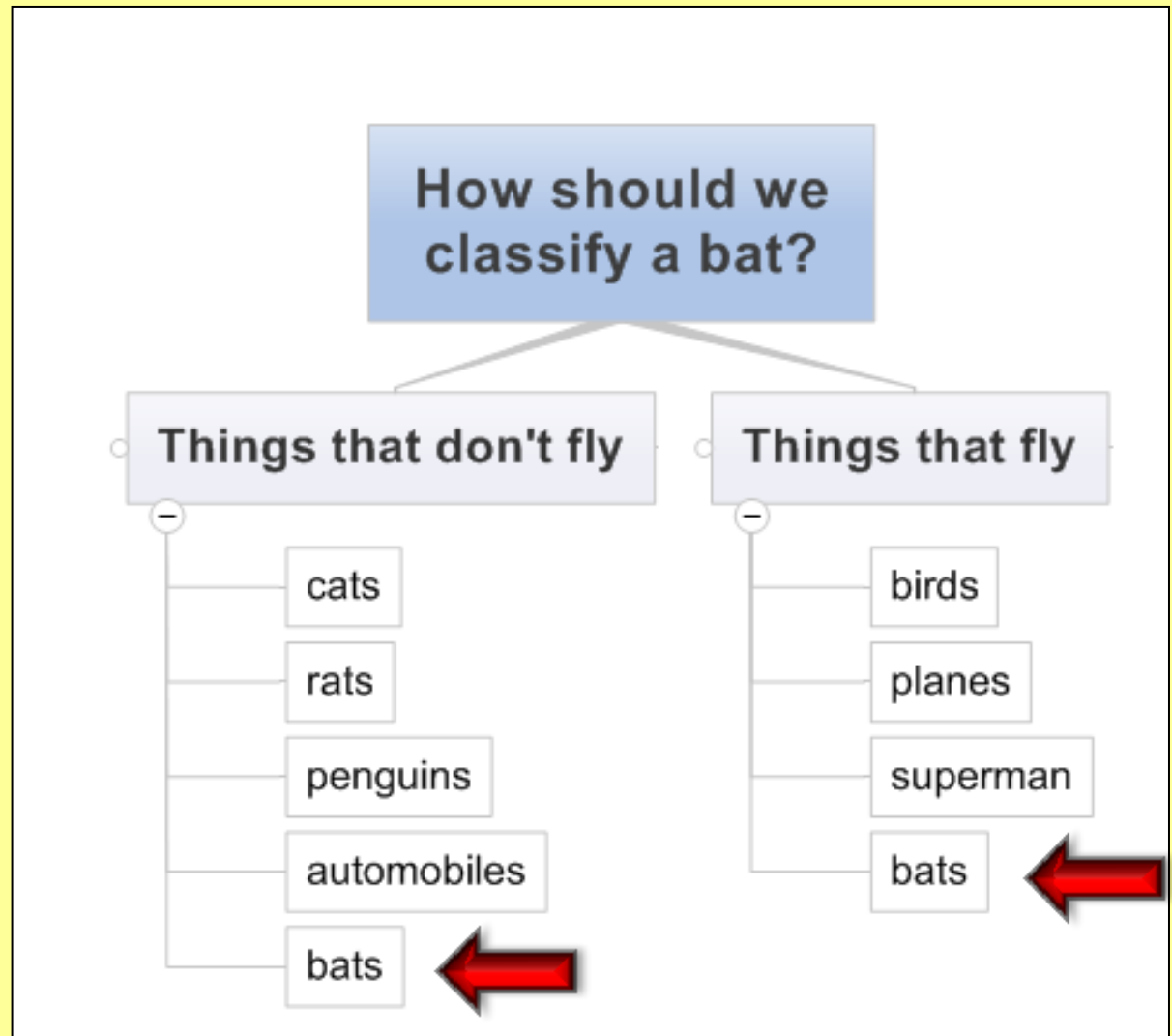
But the goal of our taxonomy is to help testers develop test ideas.

- We want to support a creative process
- That uses what they can readily see or cheaply find out
- Precision and disambiguation are much less important than stimulating useful new ideas

# TESTING THE BAT

So...

- On Mondays and Wednesdays, we can test bats like birds
- On Tuesdays and Thursdays, we can test bats like rats
- On Fridays we can do combination testing (flying rats)
- And on the weekends....



And on the weekend, we can do market research to generate more ideas for *test-it-like-this* and *test-it-like-that*.



[www.rockyandbullwinkle.com](http://www.rockyandbullwinkle.com)



<http://www.dccomics.com/sites/batman/>



<http://www.movieforum.com/movies/wallpapers/horror/dracula/>

As a reminder, here are the HTSM definitions of the product “Functions”. For the other definitions, go to <http://www.satisfice.com/tools/satisfice-tsm-4p.pdf>

You might consider adding these as “notes” to your map.

### **Functions.** *Everything that the product does.*

- *User Interface:* any functions that mediate the exchange of data with the user (e.g. navigation, display, data entry).
- *System Interface:* any functions that exchange data with something other than the user, such as with other programs, hard disk, network, printer, etc.
- *Application:* any function that defines or distinguishes the product or fulfills core requirements.
- *Calculation:* any arithmetic function or arithmetic operations embedded in other functions.
- *Time-related:* time-out settings; daily or month-end reports; nightly batch jobs; time zones; business holidays; interest calculations; terms and warranty periods; chronograph functions.
- *Transformations:* functions that modify or transform something (e.g. setting fonts, inserting clip art, withdrawing money from account).
- *Startup/Shutdown:* each method and interface for invocation and initialization as well as exiting the product.
- *Multimedia:* sounds, bitmaps, videos, or any graphical display embedded in the product.
- *Error Handling:* any functions that detect and recover from errors, including all error messages.
- *Interactions:* any interactions or interfaces between functions within the product.
- *Testability:* any functions provided to help test the product, such as diagnostics, log files, asserts, test menus, etc.



You might consider adding definitions as “notes” to your map.

The screenshot displays the Mindjet MindManager interface. The main workspace shows a mind map titled 'Heuristic Test Strategy Model'. The 'Structures' branch is expanded, showing a list of topics: 'User interface', 'System interface', 'Calculation', 'Transformation', 'Startup / Shutdown', 'Multimedia', 'Error handling', 'Interactions', and 'Testability support'. A red arrow points from the text 'Click on this icon to see your note' to the small notepad icon next to 'User interface'.

On the right side, the 'Topic Notes' panel is open for the 'User interface' topic. It contains the text: 'any functions that mediate the exchange of data with the user (e.g. navigation, display, data entry)'. A red arrow points from the text 'You can add any text as a note: definitions, test ideas, etc.' to this panel.

The top menu bar includes 'Home', 'Insert', 'Format', 'Review', 'View', 'Export', 'Catalyst', and 'Tools'. The 'Insert' menu is open, showing options like 'Callout', 'Relationship', 'Boundary', 'Icon Markers', 'Text Markers', 'Task Info', 'Attachment', 'Notes', 'Image', 'Hyperlink', and 'Image'. A red arrow points from the 'Notes' option in the 'Insert' menu to the 'Topic Notes' panel.

KanerHTSMGoogleDocs\* - Mindjet MindManager

Home Insert Format Review View Export Catalyst Tools

Paste Topic Subtopic Relationship Boundary Callout Icon Markers Text Markers Task Info Attachment Notes Image Hyperlink

Clipboard Insert Map Markers Topic Elements Formatting Style Editing

Structures +

- User interface +
- System interface +
- Application
- Calculation
- Transformation

Functions -

- Startup / Shutdown +
- Multimedia
- Error handling
- Interactions
- Testability support

formatting +

Topic Notes

Application

any function that defines or distinguishes the product or fulfills core requirements.

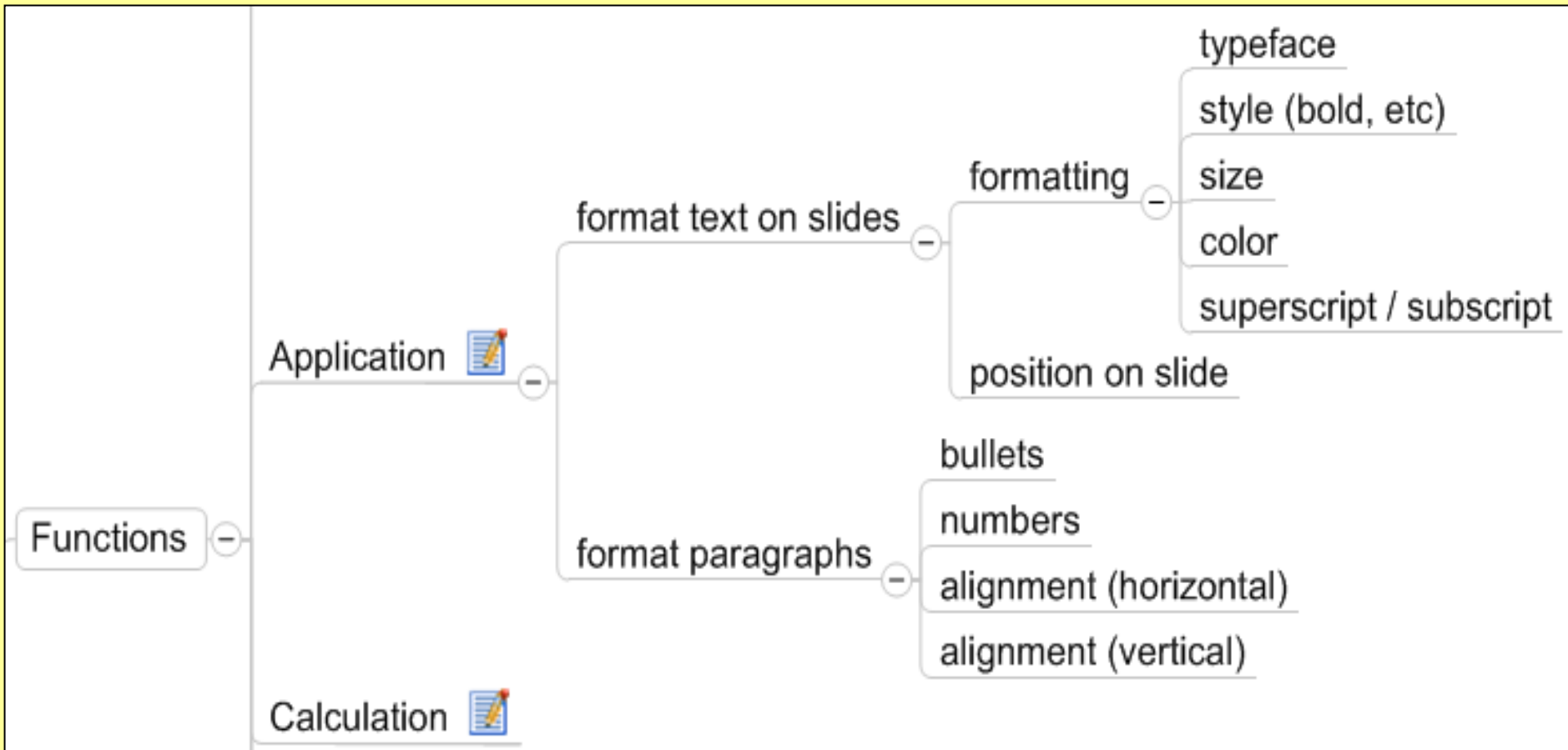
Maybe formatting a slide belongs here

You will develop consistency and speed in your classifications over time.....

Heuristic Test Strategy Model\*

Sign In

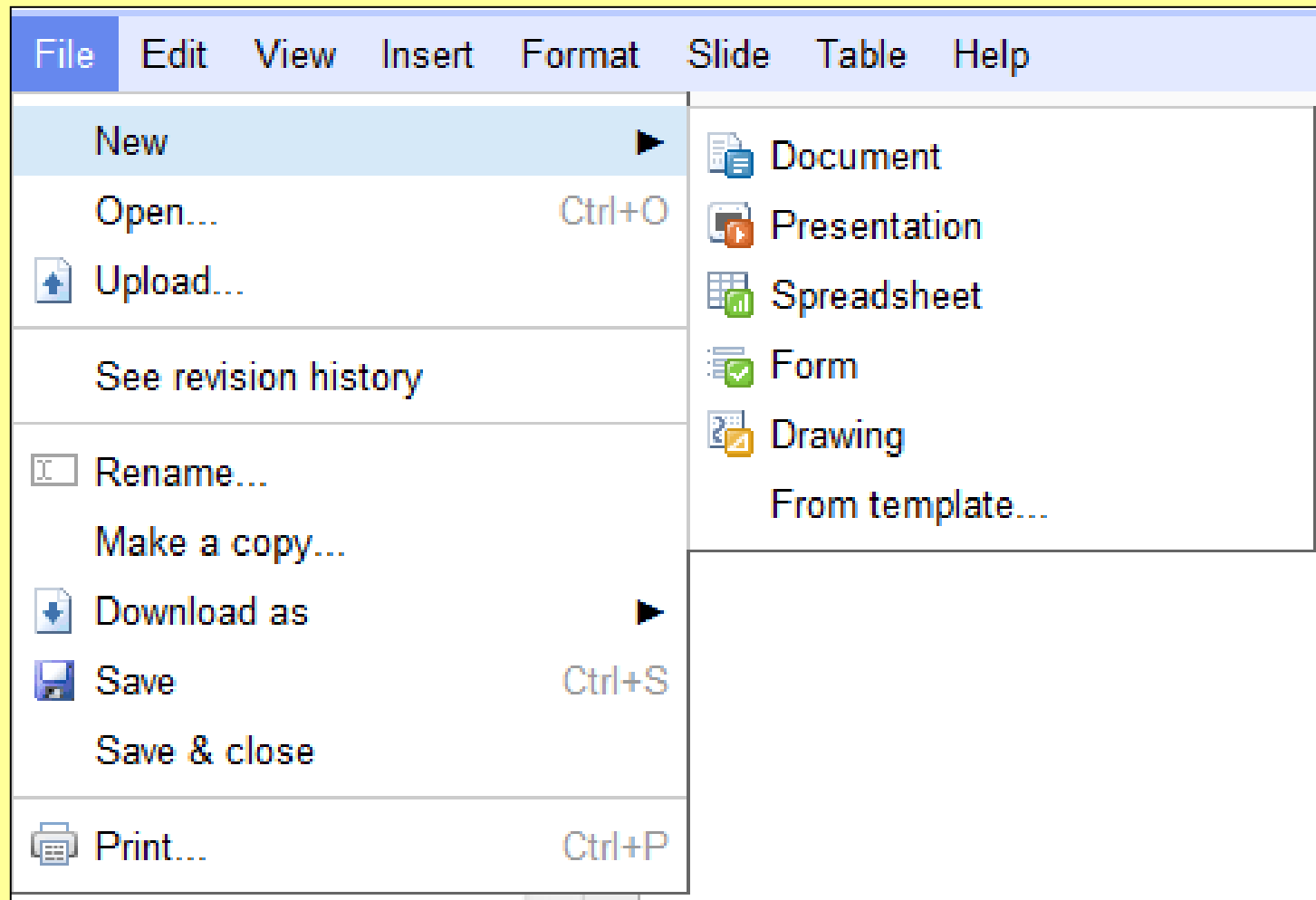
## Move slide formatting to **Functions | Application...**



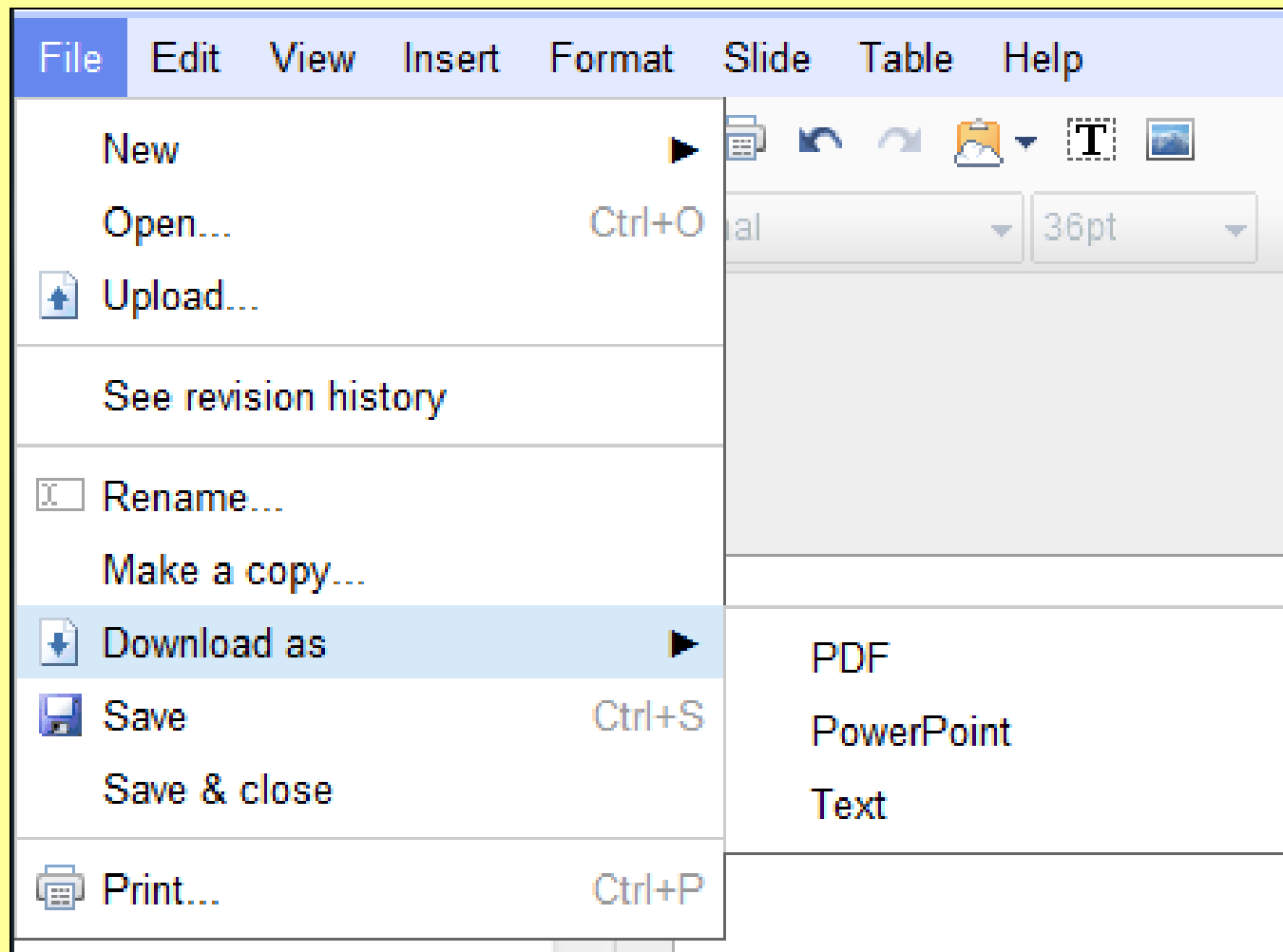
And leave a copy in **Data | Input** if you think that imagining this as manipulation of input data can help you generate usefully different test ideas.



## Continuing the feature tour

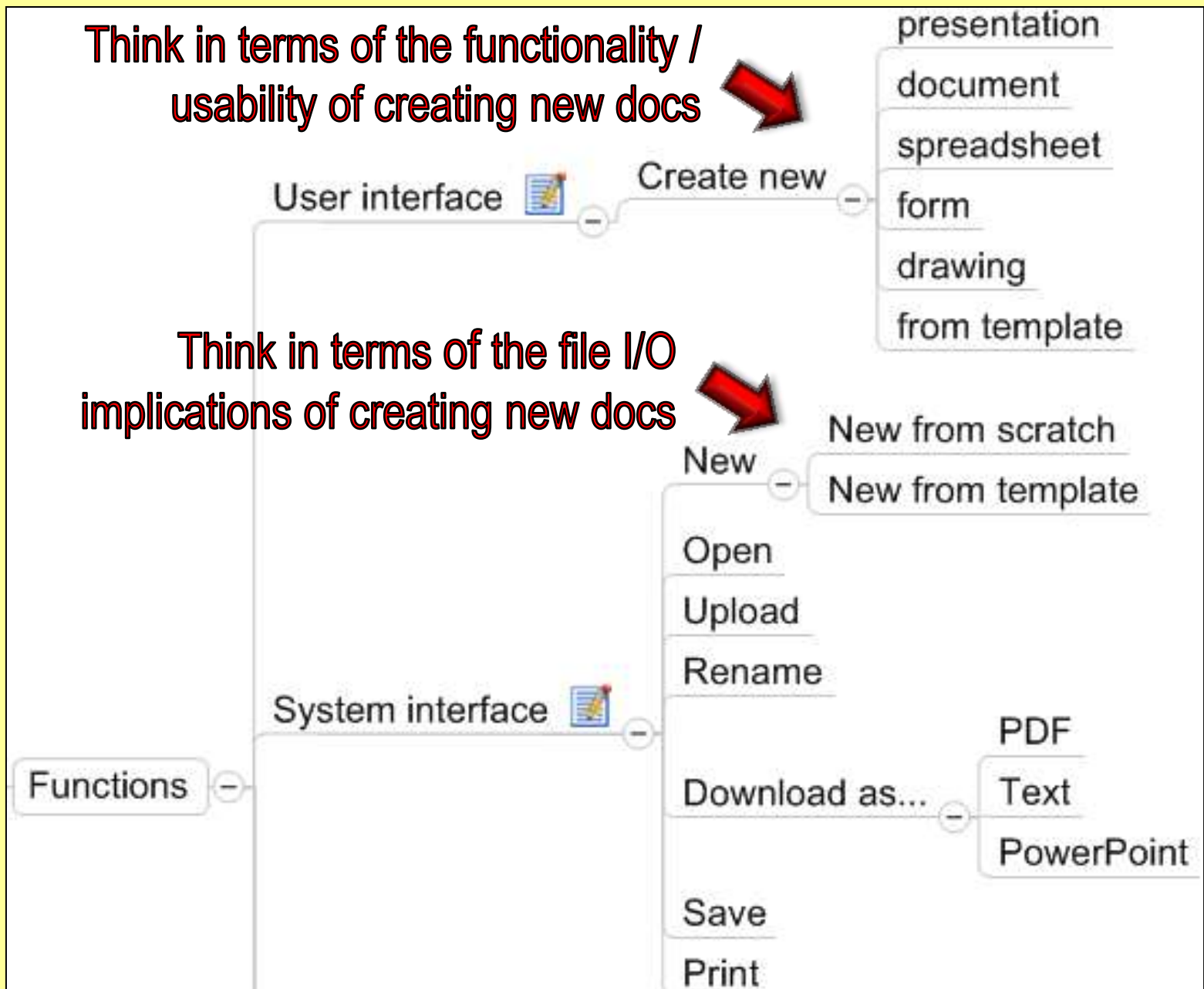


## Continuing the feature tour

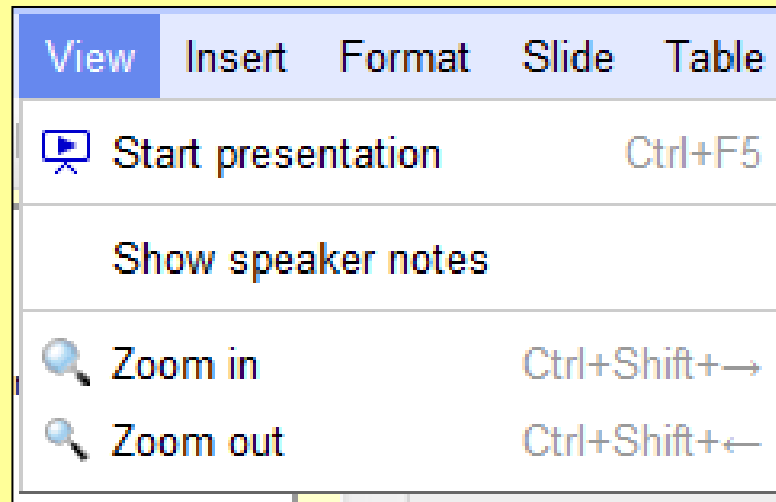
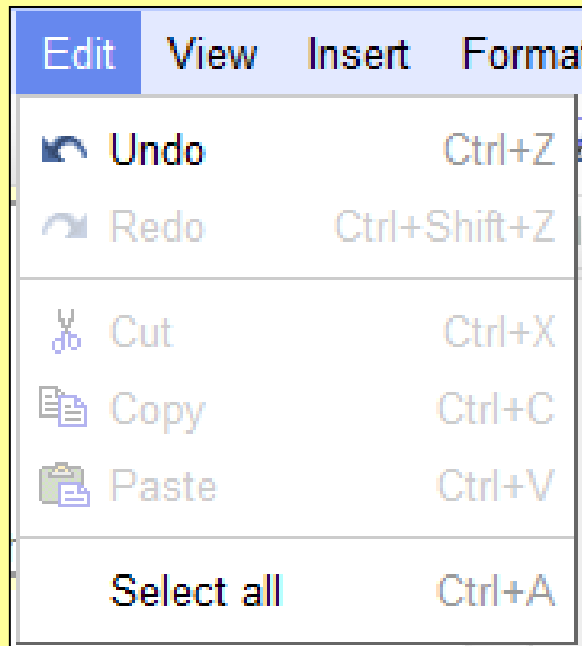


Think in terms of the functionality / usability of creating new docs

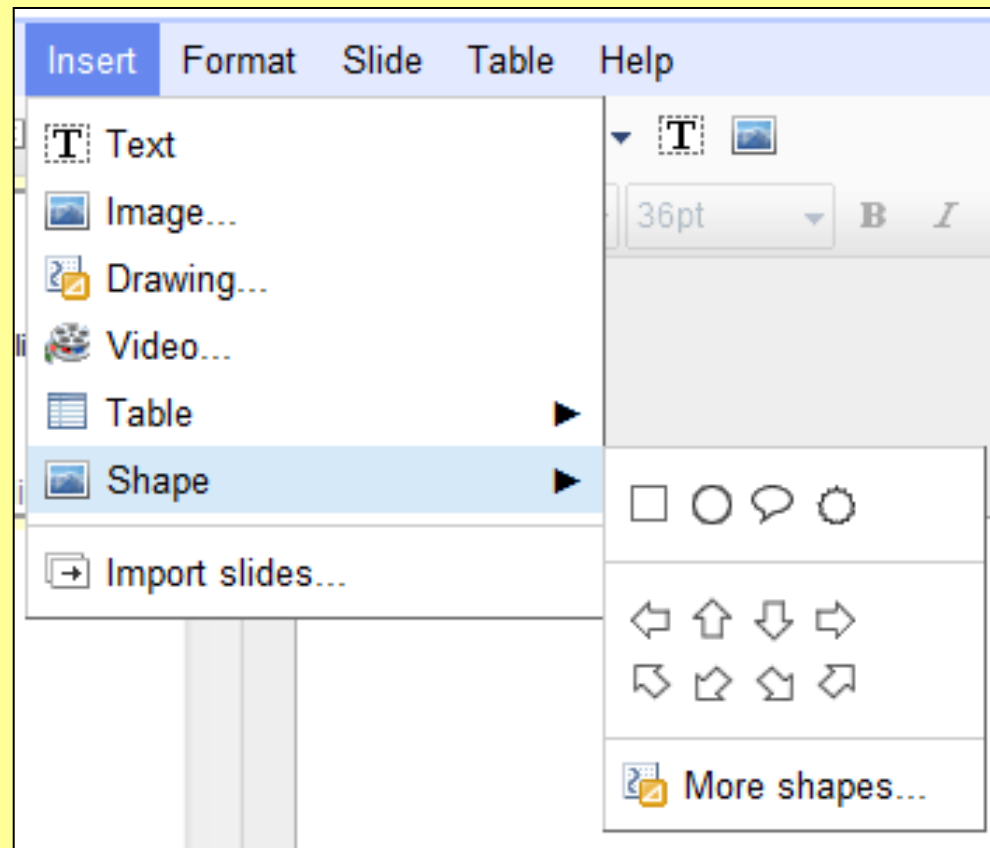
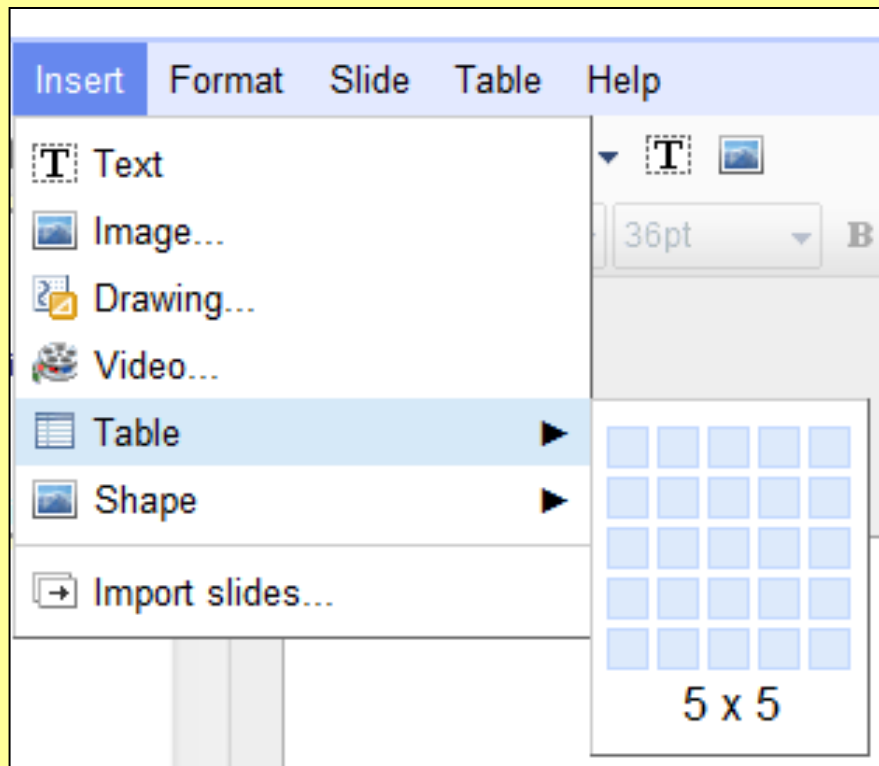
Think in terms of the file I/O implications of creating new docs



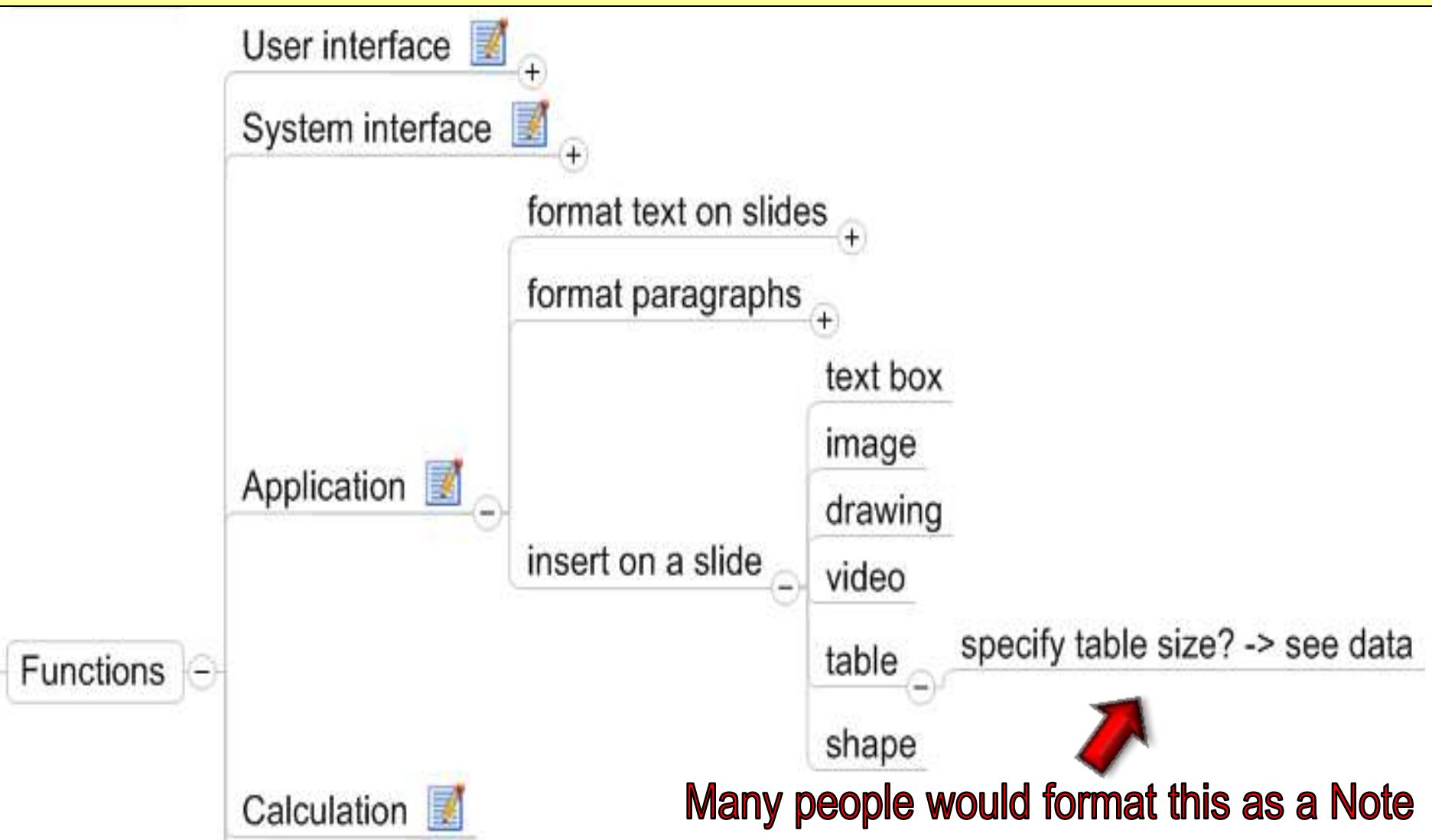
# A quick feature tour



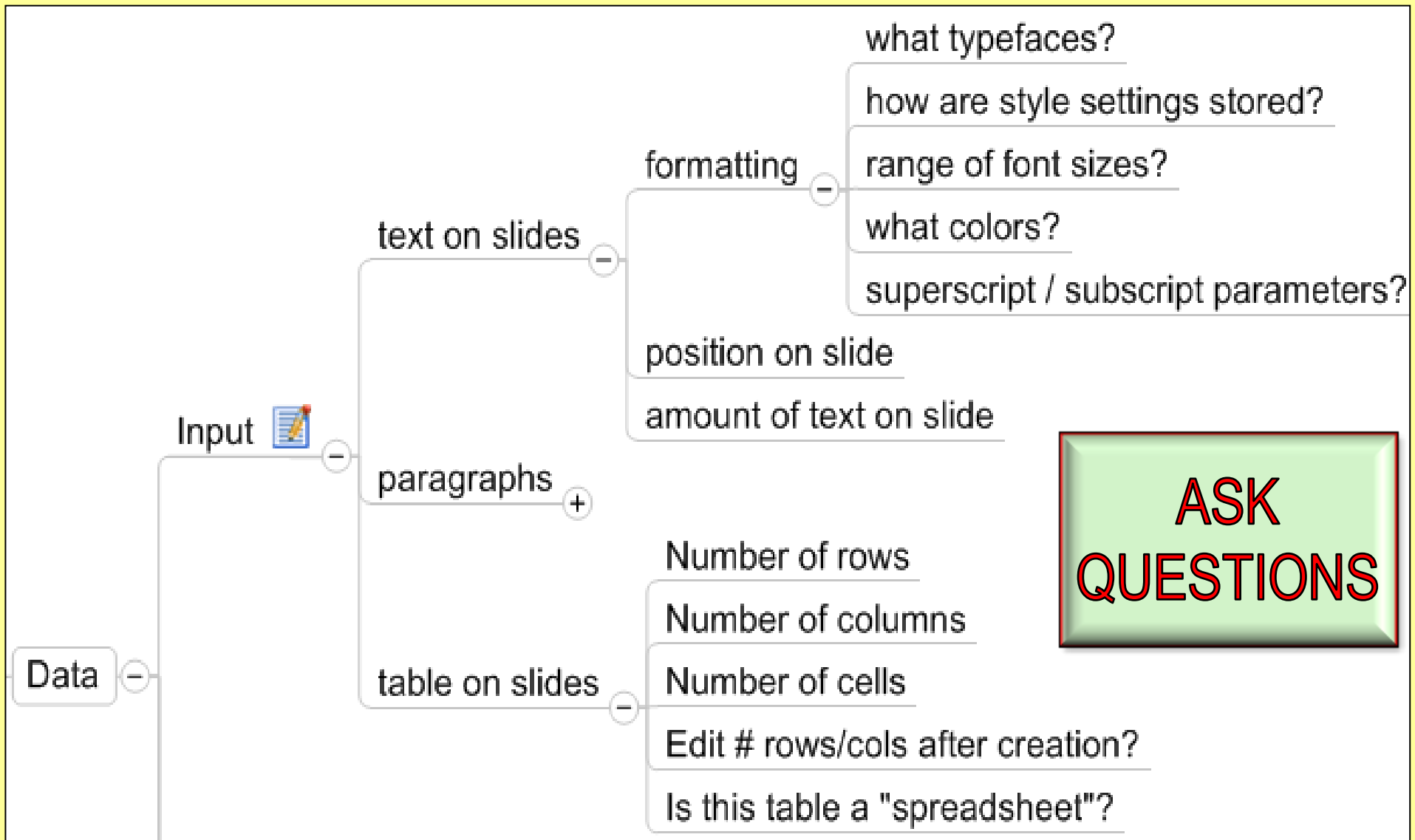
# A quick feature tour



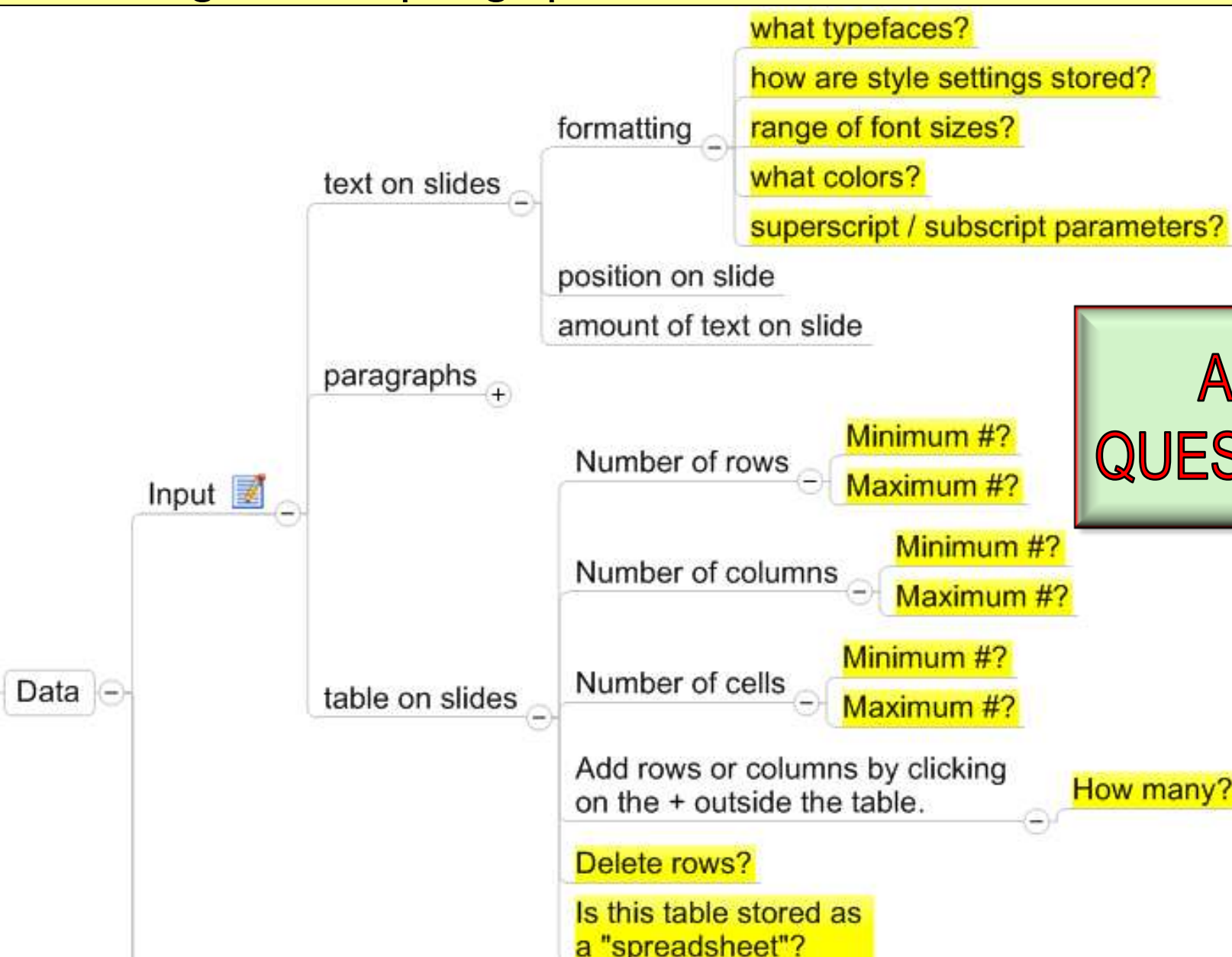
We add objects to slides, but what are their parameters?



# Thinking of text / paragraphs / tables as **data**...



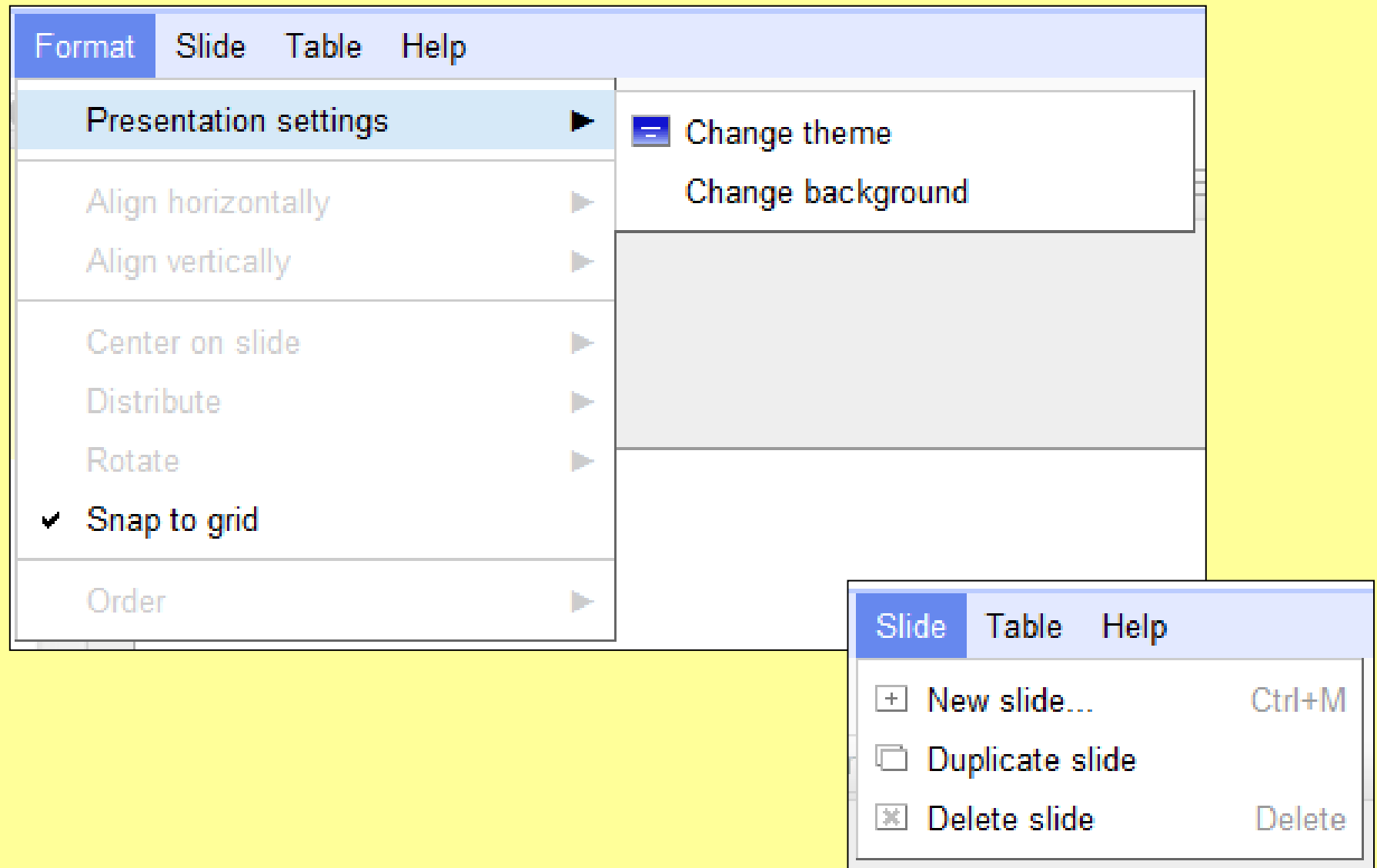
# Thinking of text / paragraphs / tables as **data**...



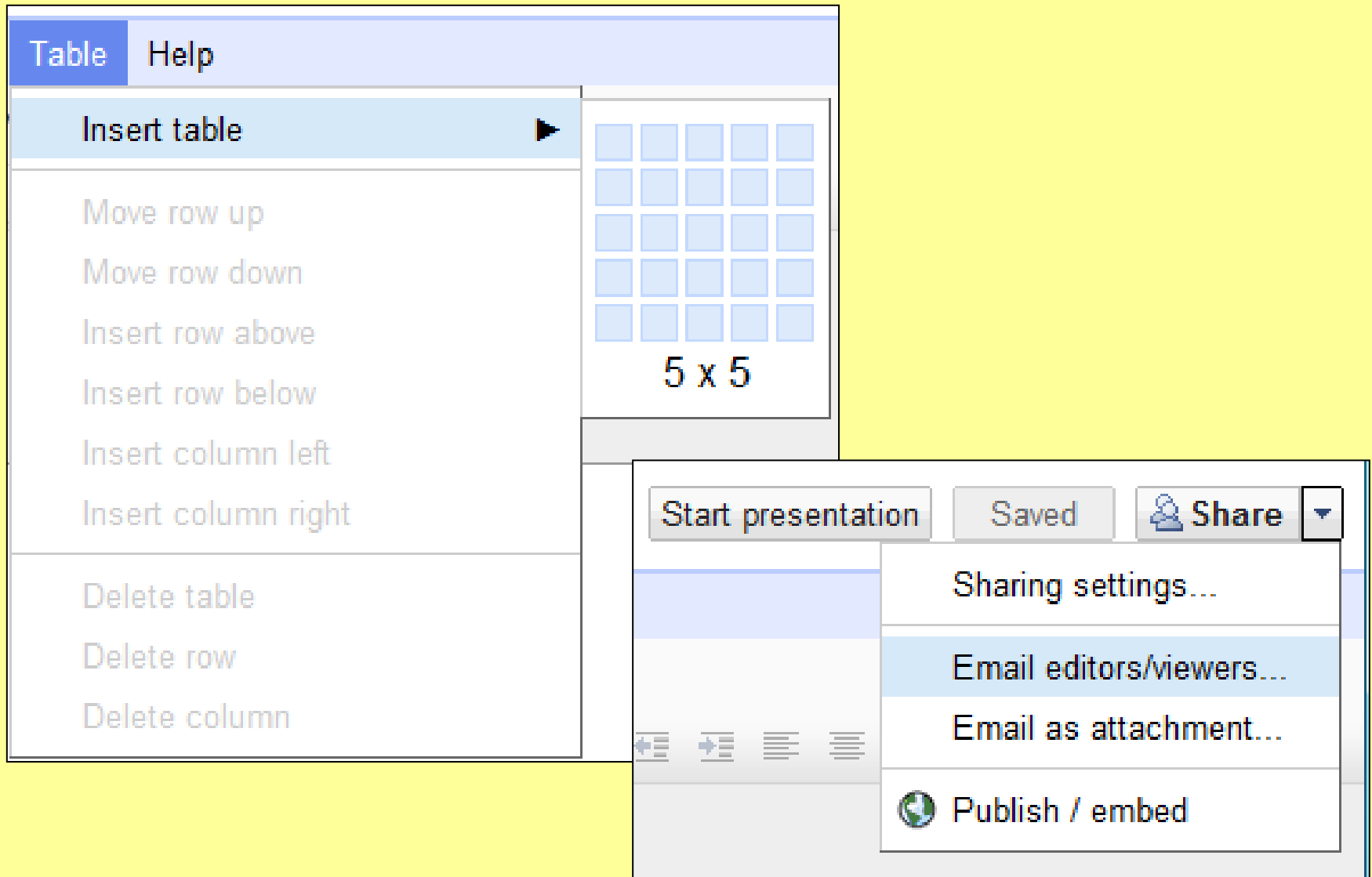
**ASK  
QUESTIONS**



# Feature tour



# Feature tour



# A quick feature tour

[Gmail](#) [Calendar](#) [Documents](#) [Web](#) [Reader](#) [more](#) ▼ [New Features!](#) | [cemkaner@gmail.com](#) | | [Settings](#) ▼ | [Help](#) | [Sign out](#)

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Language: English (US) ▼

Time zone: (GMT-05:00) Eastern Time ▼

Where items open: ☒ In a new window  
☐ In the current window

Update indicators: ☒ Bold any updated items and mark new items with "New!"

Storage: **You are currently using 0 MB (0%) of your 1024 MB.**  
Only stored files (.PDF, .DOC, .JPG, etc.) count towards your storage limit. Google Docs formats don't use up your storage space.  
Need more space? [Upgrade storage](#)

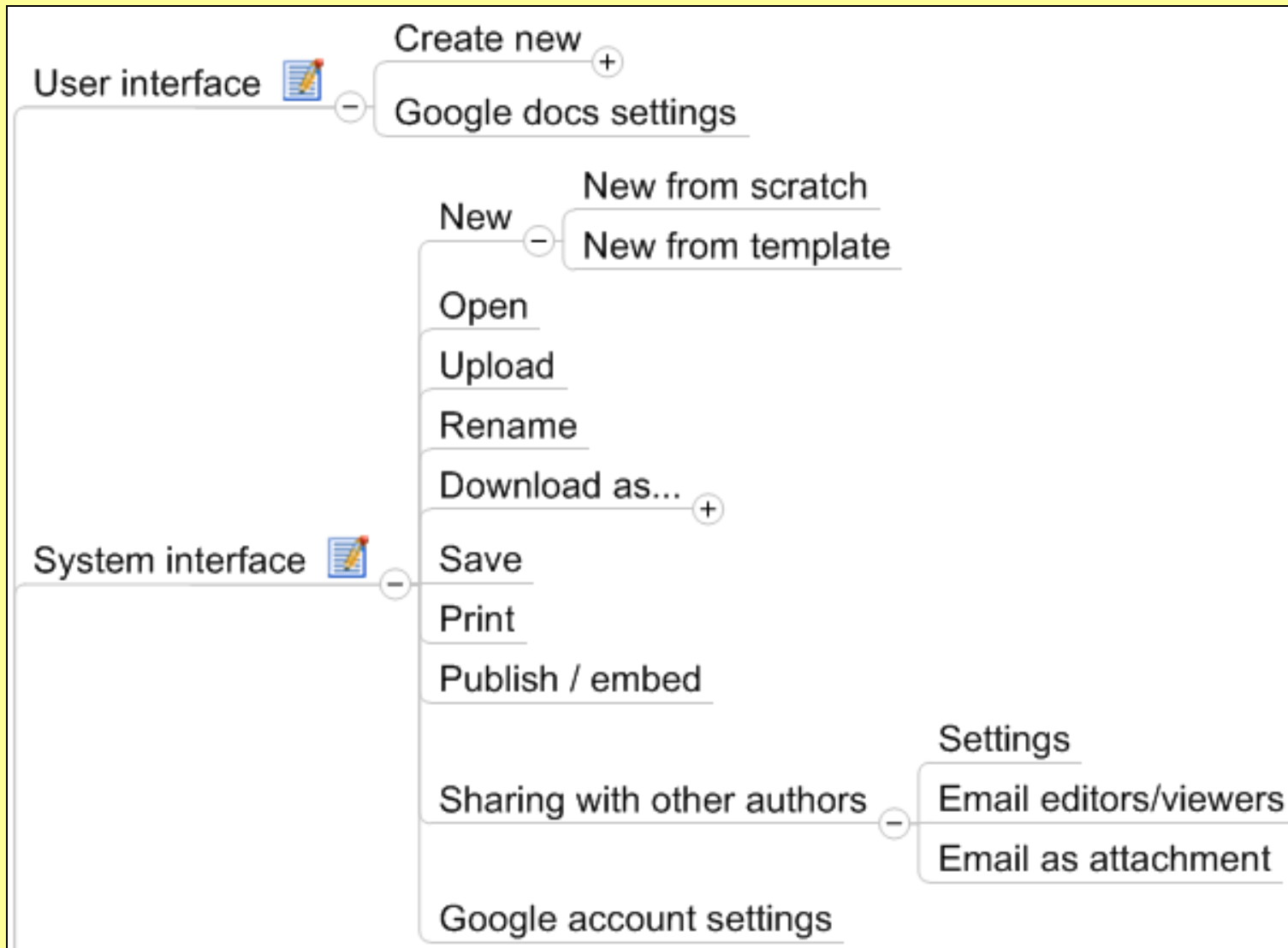
Edit your profile: Edit your [Google profile](#) to change your nickname, where you live, and other profile settings.

Google Account settings: Visit your [Google Account settings](#) to reset your password, change your security question, or learn about access to other Google services.

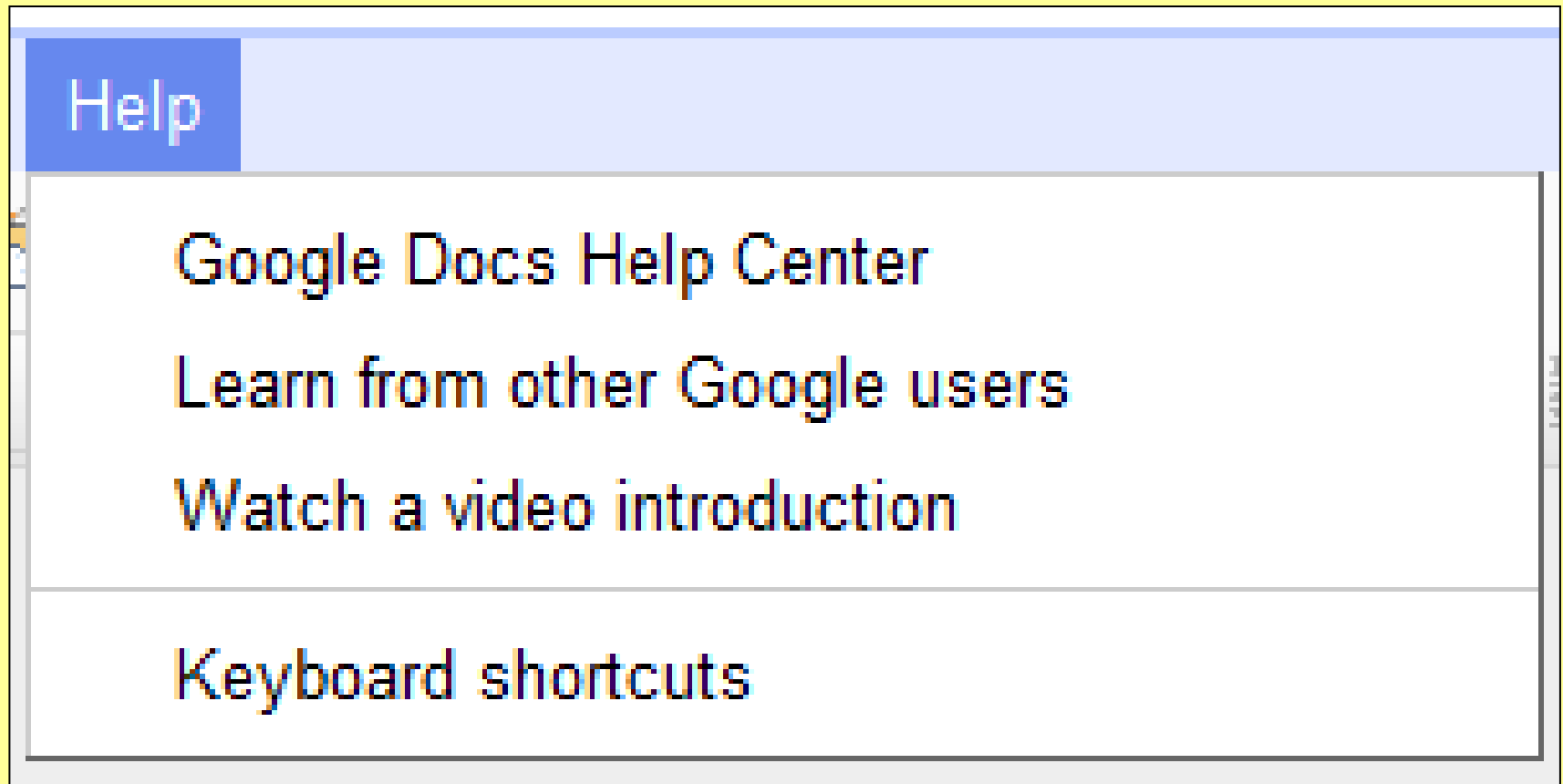
[« Back to Google Docs](#) [Save](#) [Cancel](#)

And that takes us to here...

We have a lot of feature names but not much info about them.



## FINALLY, we get to some documentation



## Docs Help

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[Publishing](#)

### Presenting

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### Using Google Docs

[Docs for students](#)

[Docs for teachers](#)

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## Popular discussions

[Unable to view/edit PPTX \(powerpoint\) files even though I uploaded with the convert option selected.](#)

Answered - 2 replies

[Tips & Tricks Blog Series: Enhancing your Google presentations using Google drawings](#)

No replies yet

[Can I share a presentation so that Guest viewing is only under the control of presenter?](#)

Answered - 6 replies

[When I try to download the ppt it tells me there's a bug or sthq... Is there any other way o exporting?](#)

3 replies

[Is there any way to collect data of presentations that are viewed by people through google analytics or other source?](#)

Answered - 2 replies

[Ask a question](#)

[More discussions »](#)

## Resources for Google Presentations

[Getting Started Guide](#)

[Known Issues](#)

[Product Ideas for Google Presentations](#)

## Adding Docs to a Website



# READING THE SPECIFICATIONS

- I can't walk through the whole specification.
- I'll work through a couple of bits that I found, to illustrate my process, and then close this up.

Let's zoom in, so that we can read some of the text...

[Help articles](#)

[Google Documents](#)

[Google Spreadsheets](#)

**Google  
Presentations**

[Google Drawings](#)

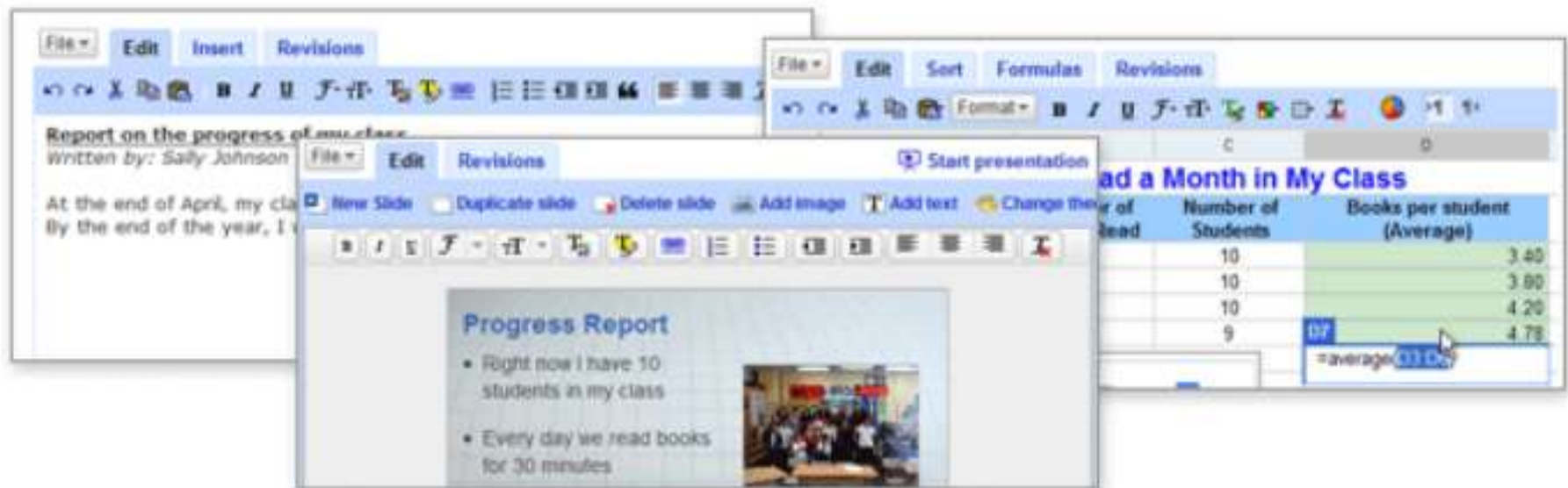
[Help forum](#)

[Take a Tour](#)



We'll start with the “tour.”





## Create basic documents from scratch or [start from a template](#).

You can easily do all the basics, including making bulleted lists, sorting by columns, adding tables, images, comments, formulas, changing fonts and more. And it's free.

## Upload your existing files.

Google Docs accepts most popular file formats, including DOC, XLS, ODT, ODS, RTF, CSV, PPT, etc. So go ahead and upload your existing files.

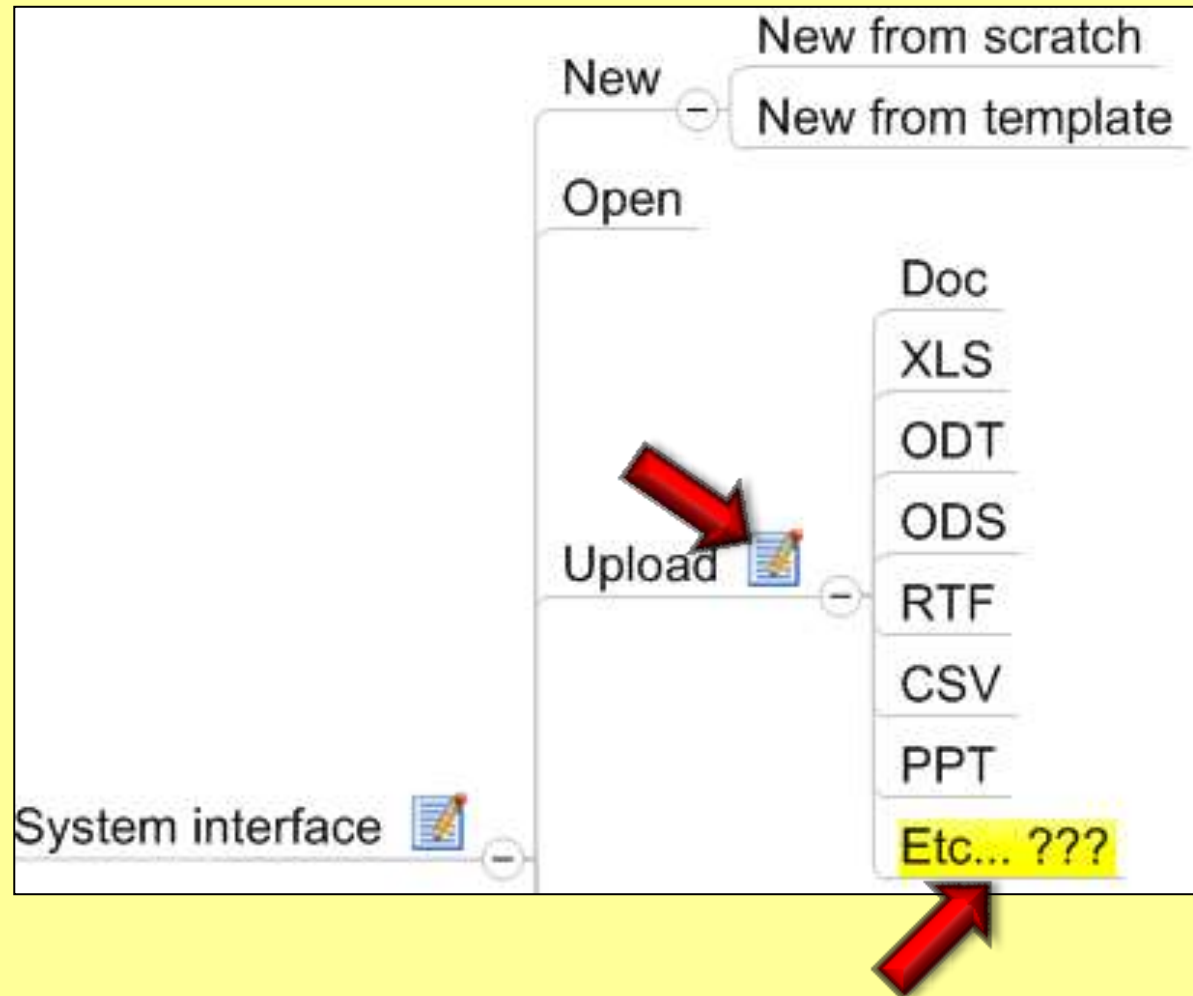
## Familiar desktop feel makes editing a breeze.

Just click the toolbar buttons to bold, underline, indent, change font or number format, change cell background color and so on.

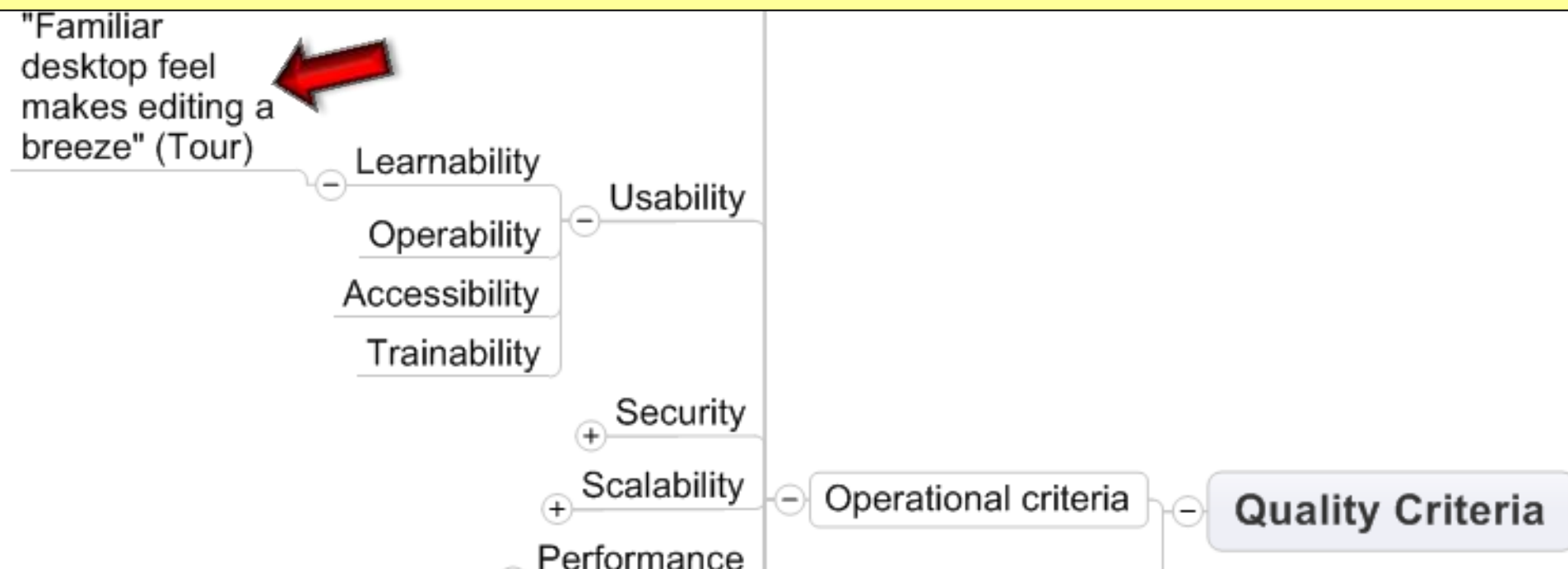
So now we know we can upload many different types of files to Google docs.

My note (on Upload) asks:

- “Will all of these formats upload to Presentations?”
- “Will all attributes upload? Even attributes that I can’t set in Google docs directly?”



It's useful to highlight questions



The tour also makes a “quality” statement—the product has a “desktop” (e.g. Microsoft) feel.

Any aspects of the software that are inconsistent with this claim are, arguably, bugs.

When citing something from the specification, especially a statement that might be a basis for a bug report, it’s useful to identify where in which specification it came from.

The tour gives many statements of benefits and sets many quality expectations. As we work further through the docs, we get to information about tables.

## **Creating and Editing Presentations**

Templates

Organizing, adding and deleting slides

Editing

 Inserting items

## Inserting items

### General

[Images](#)

[Adding and editing tables](#)



[Videos](#)

[Inserting and adjusting shapes](#)

### Drawings

[Using Google drawings with documents, spreadsheets, and presentations](#)

So, HOW MANY rows and columns can we create? It doesn't say. Later, this page explains how to add a row/column but not how to delete one.

[Google Docs](#) > [Help articles](#) > [Google Presentations](#) > [Creating and Editing Presentations](#) > [Inserting items](#) > [General](#) > Adding and editing tables

## General: Adding and editing tables



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To add a table to your presentation, follow these steps:

1. Open presentation and click **Table** > **Insert table**.
2. Select the dimensions for your table.

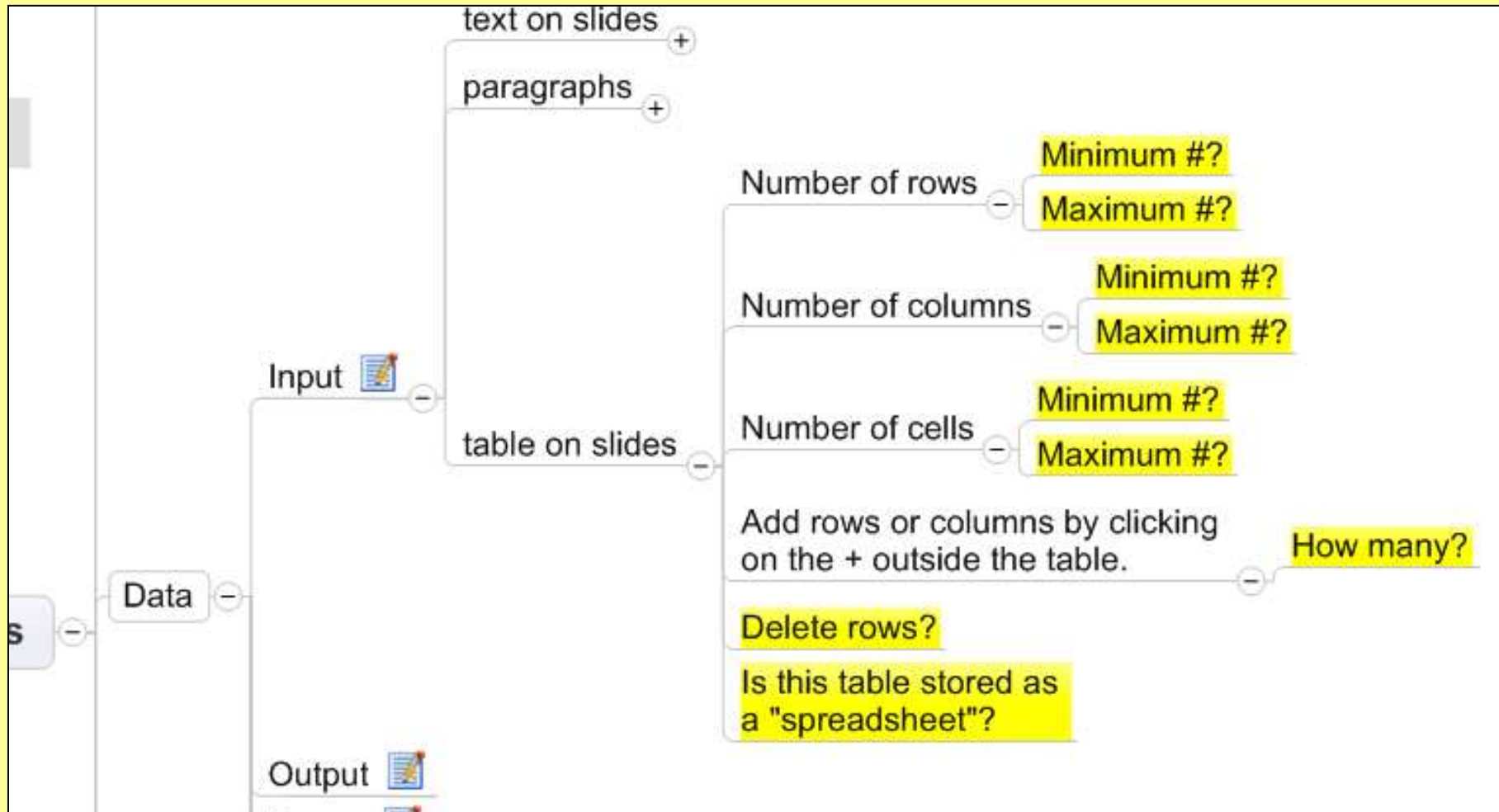
Once your table appears on your slide, you can start editing it. Here's how:

### Add rows and columns

1. Point your mouse to the outside borders of the table and a '+' sign and an arrow appear.
2. Click the '+' sign to add a row or column. The signs appear on both ends of a row or column, depending on which side of the cell your mouse is closer to. This determines where the row or column is added.
3. If you click the '+' sign at the top of a column, another column appears. If you click the '+' sign next to a row, another row appears.

For a while, the map might have more questions than answers.

Note that I'm highlighting my questions. As I work with specifications further (over months, in the working world) I scan them for answers. The highlighting is an easy visual guide to information I'm looking for.



There are other potential sources of information on tables.

(Like many specifications, the information here is distributed across many documents.)

On the main help page, we see that tables probably USED to be formatted via HTML commands. We understand those. But what is it now?

## Popular discussions

[Is fixed-width page the only option in the new google docs?](#)

Answered - 20 replies

[Please bring back Edit CSS & Edit HTML](#)

Answered - 32 replies

[Spreadsheet date format switched from dd/mm/yyyy to mm/dd/yyyy for no apparent reason](#)

4 replies

[The new editor does not have View -> Full Page Width](#)

1 reply

[changing the parameters of the sum formula](#)

9 replies

[Ask a question](#)

[More discussions »](#)





[Help forum](#) > [Google Docs](#) > [Formatting](#) > [Documents](#) > Please bring back Edit CSS & Edit HTML

## Please bring back Edit CSS & Edit HTML

[Report abuse](#)



[edoceo-code](#)

Level 1

6/22/10

Using Firefox, Chrome, whatever. The new versions of Documents don't have the Edit CSS and Edit HTML features which I really liked. The help page said to post here to tell you why I don't like the new version.

Please bring that feature back.

Even if buried another menu level deep it would be OK.

Sometimes in a pinch I need to fine tune.

Uh oh. This is a pretty major change, if it's true.

## Getting to know Google Docs: The new version of Google documents

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Here are some of the most interesting features of the new version of Google documents:

- **Real time collaboration:** See updates from other collaborators as they edit the document.
- **Higher-quality imports:** More consistent imports from your desktop into Google Docs.
- **Chat with other collaborators:** As you make your edits, you can chat with other document editors about the changes, from within the document.
- **Ruler:** Google documents have a ruler for setting margins, indentations, and tab stops.



### What else is different?

You'll probably notice that some features from the older version of Google documents aren't available yet. Don't worry: we'll be adding a lot of them soon.

These features from the previous version of Google documents, however, won't be available in the new version:

- Offline document access via Google Gears
- Edit HTML
- Edit CSS

And later in this thread, we see interesting project information...

Jeff Harris

Google Employee

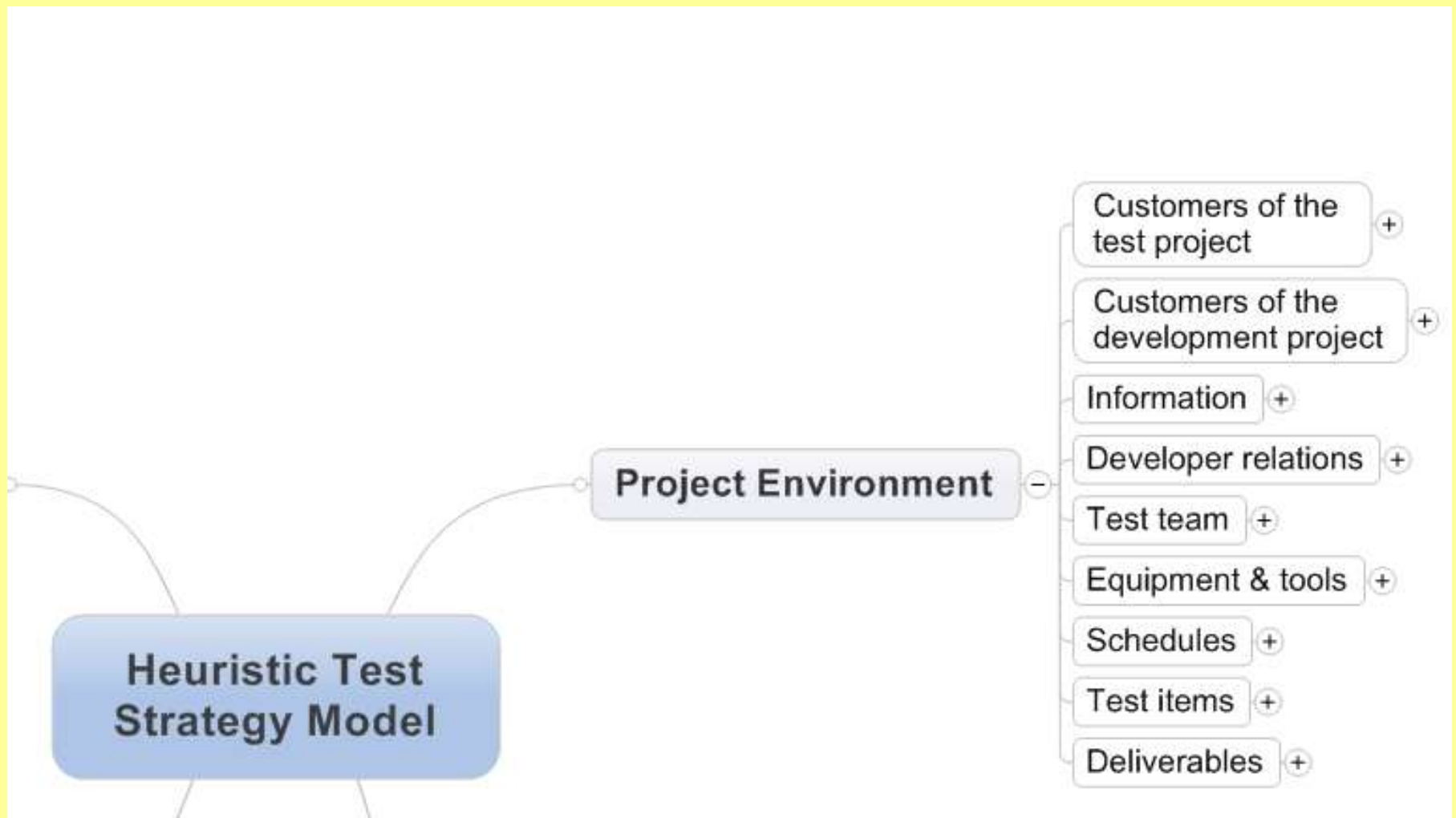
6/13/10

@ahab - I do care. We're trying as hard as we can to add features to the new editor. The unfortunate reality is that we're working on the new editor while maintaining the old editor and that's dangerous: the old editor is becoming more and more dated and harder to keep running because it's not being actively developed. We need to move people off the old editor, so we can focus our full attention on improving the new one. I know that's not a satisfying answer, but it's the truth.

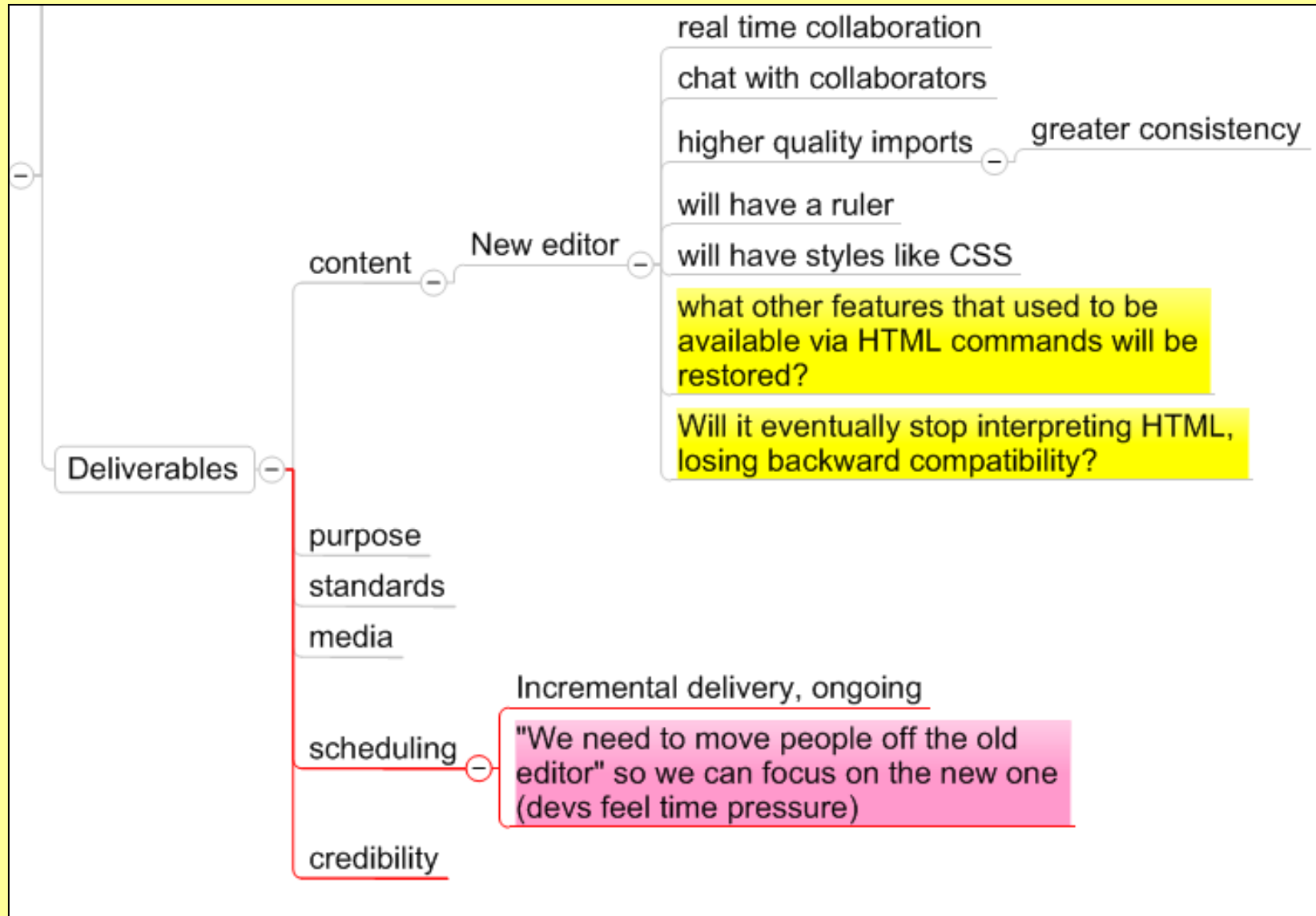
I think we're getting close to an acceptable level of feature parity with the new editor which is why we're turning it on for new documents. Styles aren't there and that's certainly the biggest feature on my mind. But Styles are complex to implement properly which is why it's going to take some time.

There will still be ways of creating documents in the old editor (e.g. by visiting <https://docs.google.com/?action=newdoc>), but they won't be prominently featured in the UI anymore.

Now we have a little info about the project.  
Where to put it?



# Mainly about upcoming features, so for now, I update **Project Elements | Deliverables** and to **Quality Criteria**



# SO WHAT DOES THIS MEAN?

- The code is in transition
- Many of our questions about tables will stay unanswered (from the spec).
  - We might find definite answers in help documents, but they may be outdated
  - It will be interesting to import tables to see what attributes fail.
- With so many open questions, in actual testing practice, I would soon do some exploratory testing to see what has actually been delivered and how it handles diverse features in imported tables

# WHERE ARE WE IN THE ASSIGNMENT?

- Your assignment will have more information in the map, but it will be the same type of information:
  - Some information about features
  - Some information about data
  - Some information about quality expectations
  - A little bit of information about how the project is being run
    - We probably won't get much project info because most of those details are kept private inside the company
- Along with the information from the specs, you should have
  - some highlighted questions (I used yellow)
  - some highlighted risks (I used pink)
  - some highlighted test ideas (I use green)

# THIS EXERCISE

This exercise illustrates the method.

- Google Docs spreads its product information across tours, videos, help files, product support discussions, and probably marketing materials and internal development docs.
- Even with this simple a project, we can see how fragmented the information can get, and how easily different sources can get out of synch with each other
- On larger projects, it can be much more complex, but the approach is the same
- You probably don't have time (in real work) to **finish** this task, but you can keep assimilating new information into the model, from formal and informal specs and from external sources (e.g. ideas from competing products) throughout the project.



# FINAL NOTES ON THE MODEL

As I noted above, everyone who uses this model seriously customizes it.

James Bach has noted a couple of the factors that have led to evolution of his version of the model:

- “Retirement through disuse: I deleted ‘budget’ after a few years just because I noticed I wasn't using it.”, and
- “Addition through failure experience: I added ‘Startup/Shutdown’ specifically because I once missed a bug that only happened when starting up the app in a specific way. I had neglected to think that through, and realized there was not systematic reminder of that in the HTSM.”

There are many other excellent reasons to update the model or customize it. The point is, if you're going to use it, don't be shy about adapting it to suit your needs and preferences..