

Skyline

Mental Model Diagram Generator

Katharina Aschauer, Jules Albert Gaston Barreaux,
Alberto Mimbrero Sánchez, Águeda Pradera Medina

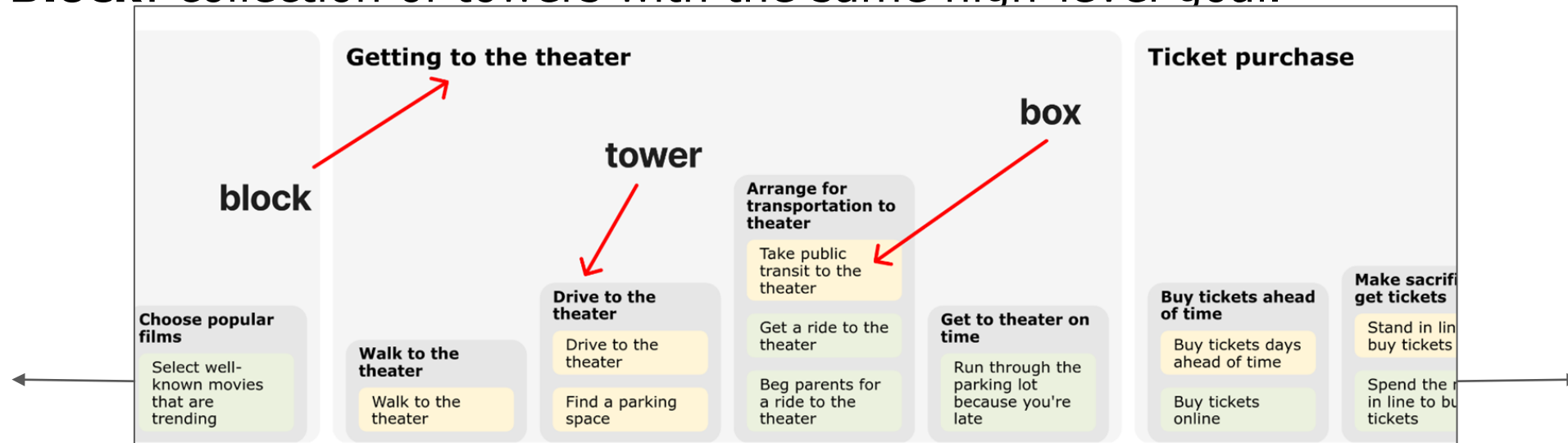
Information Architecture and Web Usability

Group 1

28 Jan 2025

Mental Model Diagrams

- Mental Model Diagrams represent how a system works in someone's mind.[1]
- 3 Level Hierarchy (by Indi Young [2]):
 - **Box:** summary of inner thinking, emotional reaction or guiding principle.
 - **Tower:** collection of multiple boxes related to the same purpose.
 - **Block:** collection of towers with the same high-level goal.



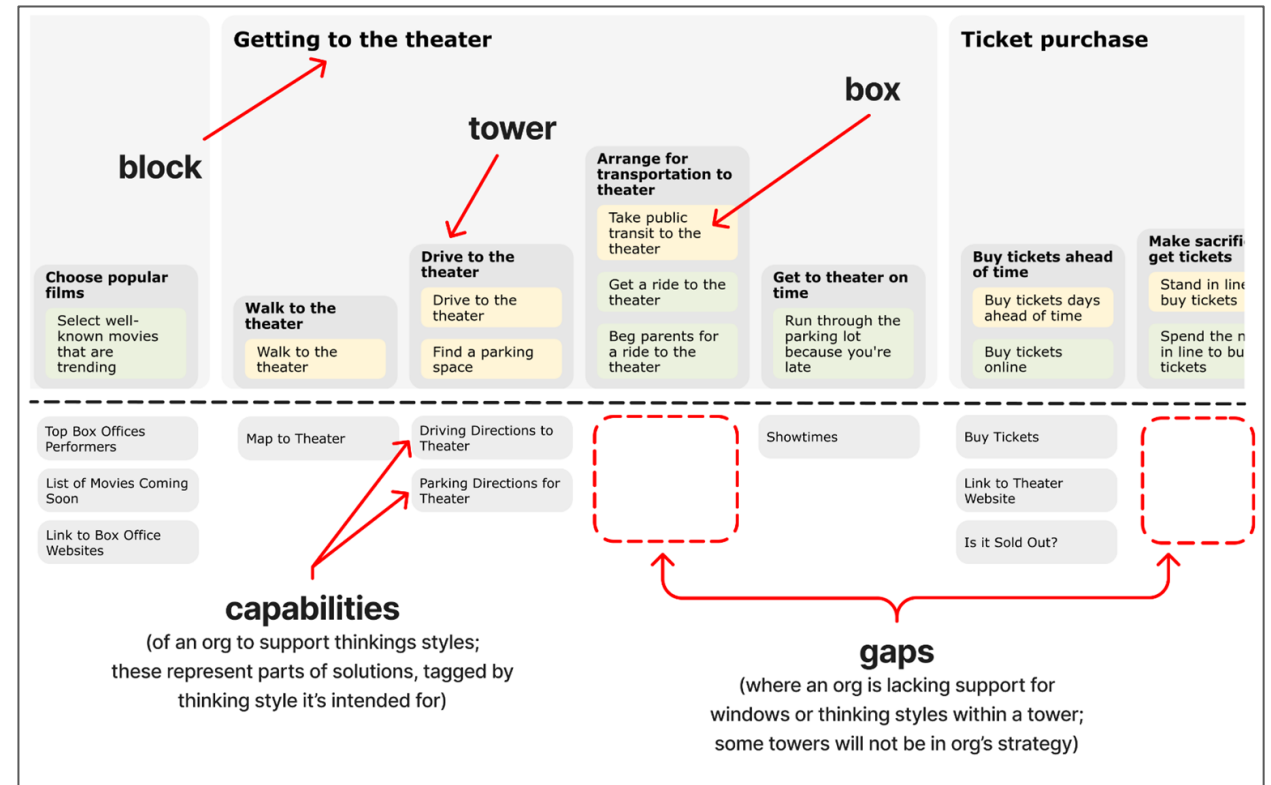
Mental Model Diagram snippet to demonstrate the different building blocks.

[1] Jack O'Donoghue, 10 Mental Model Examples for Better UX Design, 20 Feb 2023: <https://makeiterate.com/mental-model-examples-for-better-ux-design/>

[2] Indi Young, Mental Models: Aligning Design Strategy with Human Behavior. Rosenfeld Media 2008, ISBN 9781933820194, Chapter 10.

Mental Model Diagrams and Alignment Diagrams

- Alignment Diagrams “describe the class of maps and diagrams that visualize touchpoints in a business process”. [1]
- Mental Model Diagrams can be used as top half of an Alignment Diagram.
- Mental Model Alignment Diagrams give overview about many aspects of a product.
 - Redundancies, opportunities, misconceptions.
 - Easily readable, can be understood by people without background knowledge.



Alignment Diagram consisting of a Mental Model Diagram and a Content Model.

[1] James Kalbach, Paul Kahn, Locating Value with Alignment Diagrams, Parsons Journal for Information Mapping, Spring 2011
http://piim.newschool.edu/journal/issues/2011/02/pdfs/ParsonsJournalForInformationMapping_Kalbach-James+Kahn-Paul.pdf, Page 2-3

Showcase: Indi Young's Generator

Indi Young's Mental Model Diagram Generator

Showcase Video

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26 Nov 2024

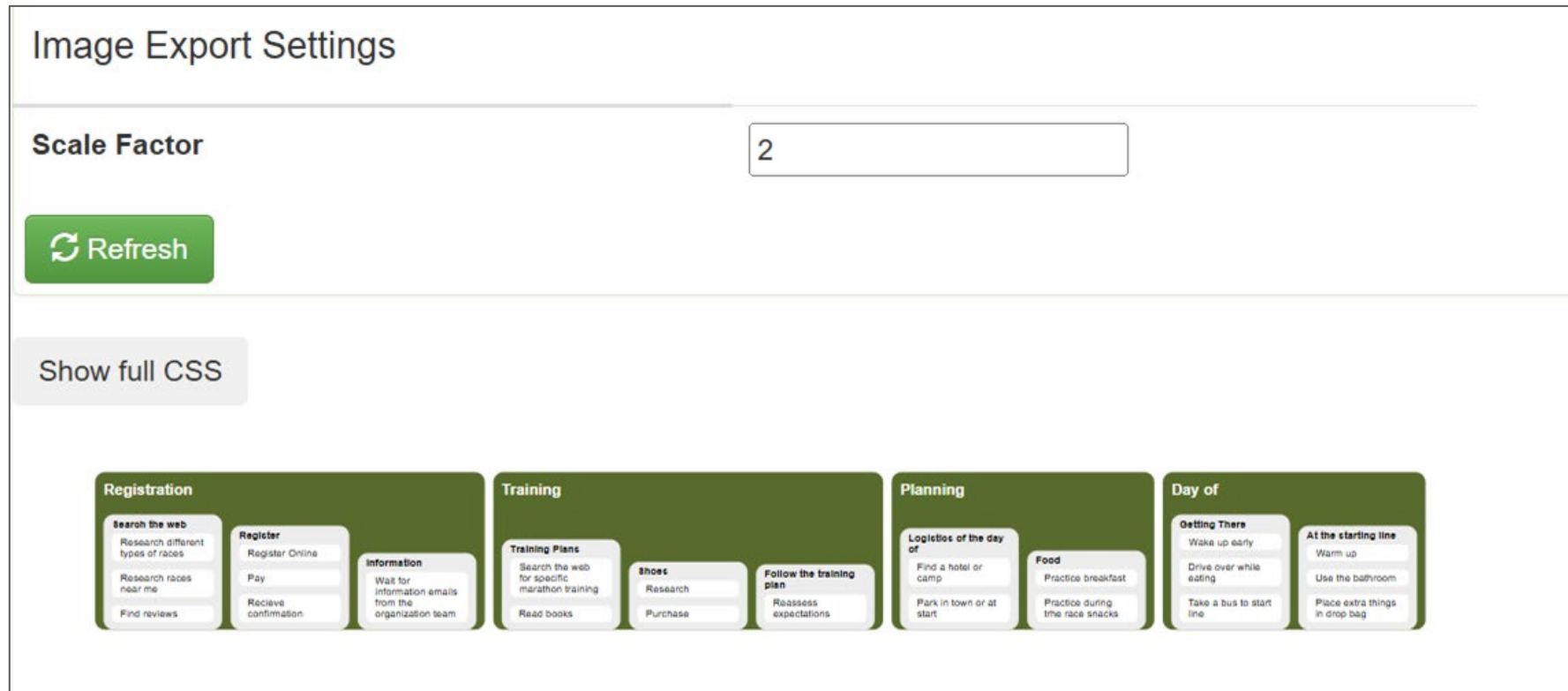
Using Google Chrome Version 131.0.6778.85 on Fedora Linux 41 (Workstation Edition)

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<https://youtu.be/Rw2bIwt7Fok>

Indi Young's Mental Model Generator [1]




- Usage is counterintuitive.
- GUI is not very well designed.



Indi Young's Mental Model Generator [1]

Other problems:

- Sheet re-upload is faulty.
- Invalid SVGs.
- Limited options for personalization.
- No possibility to edit in real time.
- Unfinished, does not provide all the functionality it promises.

Rectangles	Fill Color	Text Width
Neighborhood		
Mental Space		
Tower		
Summary		<input type="text" value="100"/>

Solution:

- Skyline: Mental Model Diagram Generator

Skyline - Mental Model Diagram Generator

Skyline - Mental Model Diagram Generator

- Inspiration: Indi Young's Mental Model Diagram Generator.
- Motivation: rewrite, so more usable and more features.
- Added Features:
 - Better, more reliable functionality.
 - Improved design and usability.
 - Multi-language: English, French, German, Spanish.
 - Live spreadsheet editing and download.
 - Desktop application.
- GitHub Repository: <https://github.com/katasc22/iaweb24-mmd-generator>
- Deployed via GitHub pages on: <https://katasc22.github.io/iaweb24-mmd-generator/>

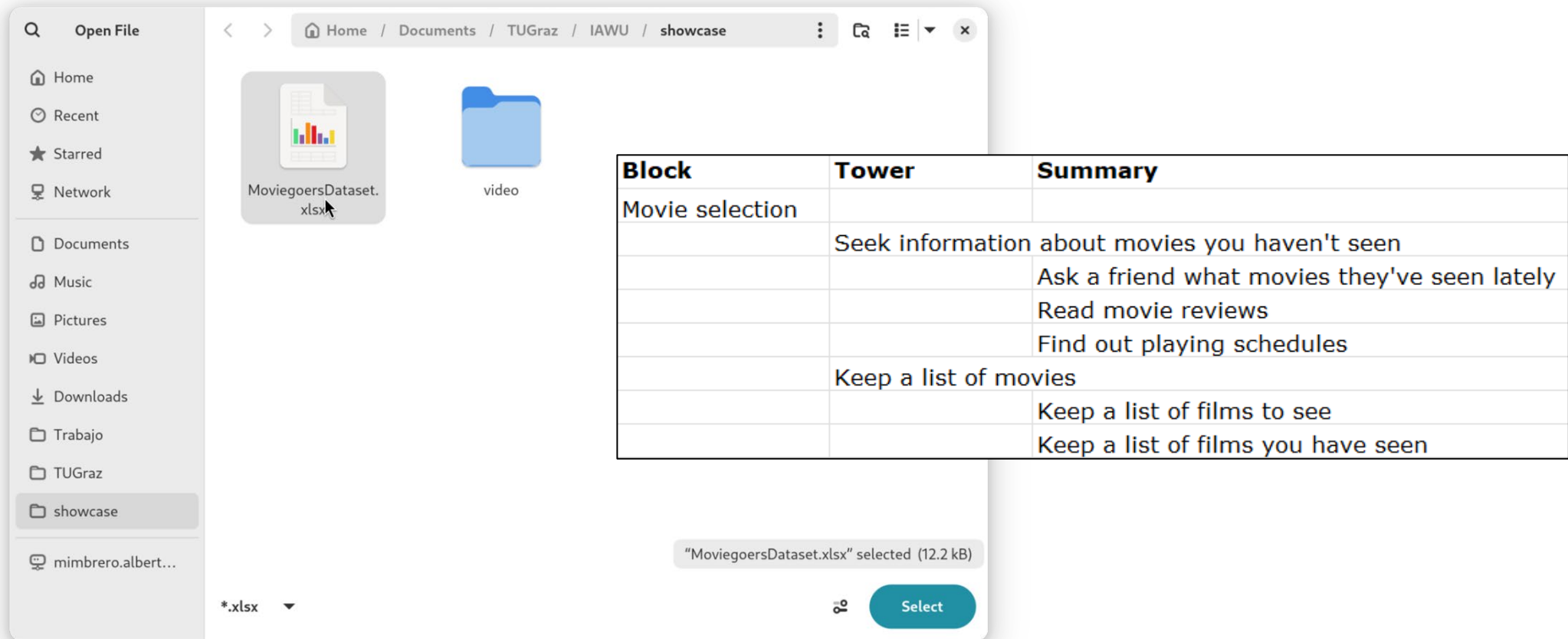
Tech Stack

- Frontend: Nuxt (vue.js).
- Spreadsheet parsing: SheetJS (supports xlsx, ods and csv: <https://sheetjs.com/>).
- Spreadsheet preview: Canvas DataGrid (<https://canvas-datagrid.js.org/>).
- Tailwind CSS for styling (<https://tailwindcss.com/>).
- Hosting: GitHub pages.
- Pinia for data storage (<https://pinia.vuejs.org/>).
 - LocalStorage for persistent settings.
- Tauri for native app build (<https://v2.tauri.app/>).

Skyline - Features

Skyline - Spreadsheet Upload

- Upload spreadsheet file.
- Data has to be structured in the expected 3 level hierarchy of the diagram.



The screenshot shows a file explorer window with the path `Home / Documents / TUGraz / IAWU / showcase`. The file `MoviegoersDataset.xlsx` is selected. A table with the following structure is overlaid on the right:

Block	Tower	Summary
Movie selection		
	Seek information about movies you haven't seen	
		Ask a friend what movies they've seen lately
		Read movie reviews
		Find out playing schedules
	Keep a list of movies	
		Keep a list of films to see
		Keep a list of films you have seen

Skyline - Spreadsheet Preview

- Interactive preview.
- Live updates in the diagram.

FILE CONTENT			
	A	B	C
1	Block	Tower	Summary
2	Movie selection - edit		
3		Seek information about movies	
4			Ask a friend what movies they've...
5			Read movie reviews
6			Find out playing schedules
7		Keep a list of movies	
8			Keep a list of films to see

Skyline - Advanced Settings

- Font color, font family, font size, background color, border color can be set by user.
- Settings persist when closing application.
- Can be set globally or per element.

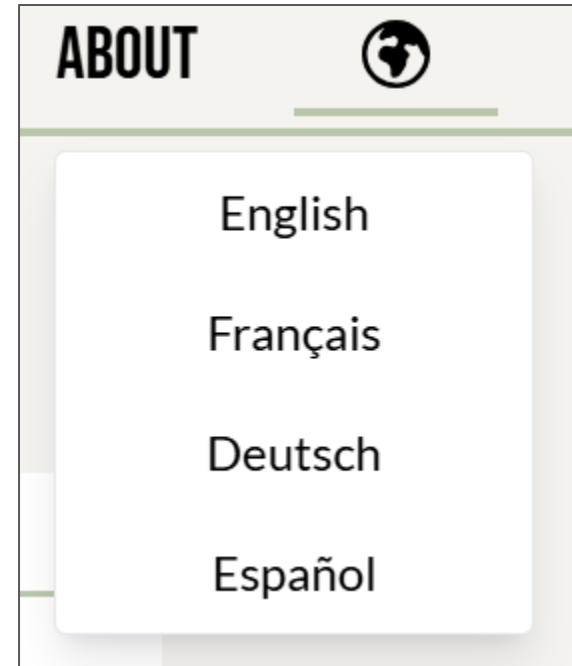
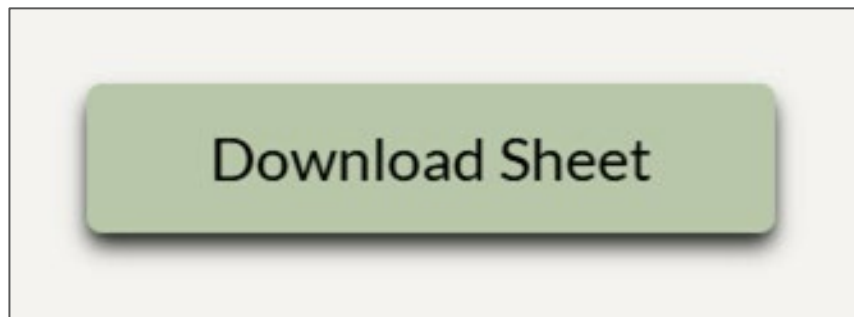
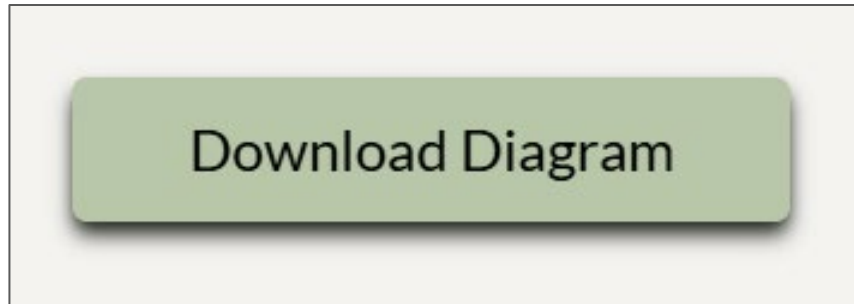
The screenshot displays a settings interface for 'Skyline' with four distinct sections: Global Settings, Block Settings, Tower Settings, and Box Settings. Each section contains controls for Background Color, Border Color, Text Color, Font Family, and Font Size. A 'Save' button is located at the bottom center.

Section	Background Color	Border Color	Text Color	Font Family	Font Size
Global Settings	[Color Picker]	[Red Color Picker]	[Blue Color Picker]	Arial	14
Block Settings	[Color Picker]	[Red Color Picker]	[Blue Color Picker]	Verdana	14
Tower Settings	[Red Color Picker]	[Red Color Picker]	[Blue Color Picker]	Arial	14
Box Settings	[Color Picker]	[Red Color Picker]	[Blue Color Picker]	Arial	14

Save

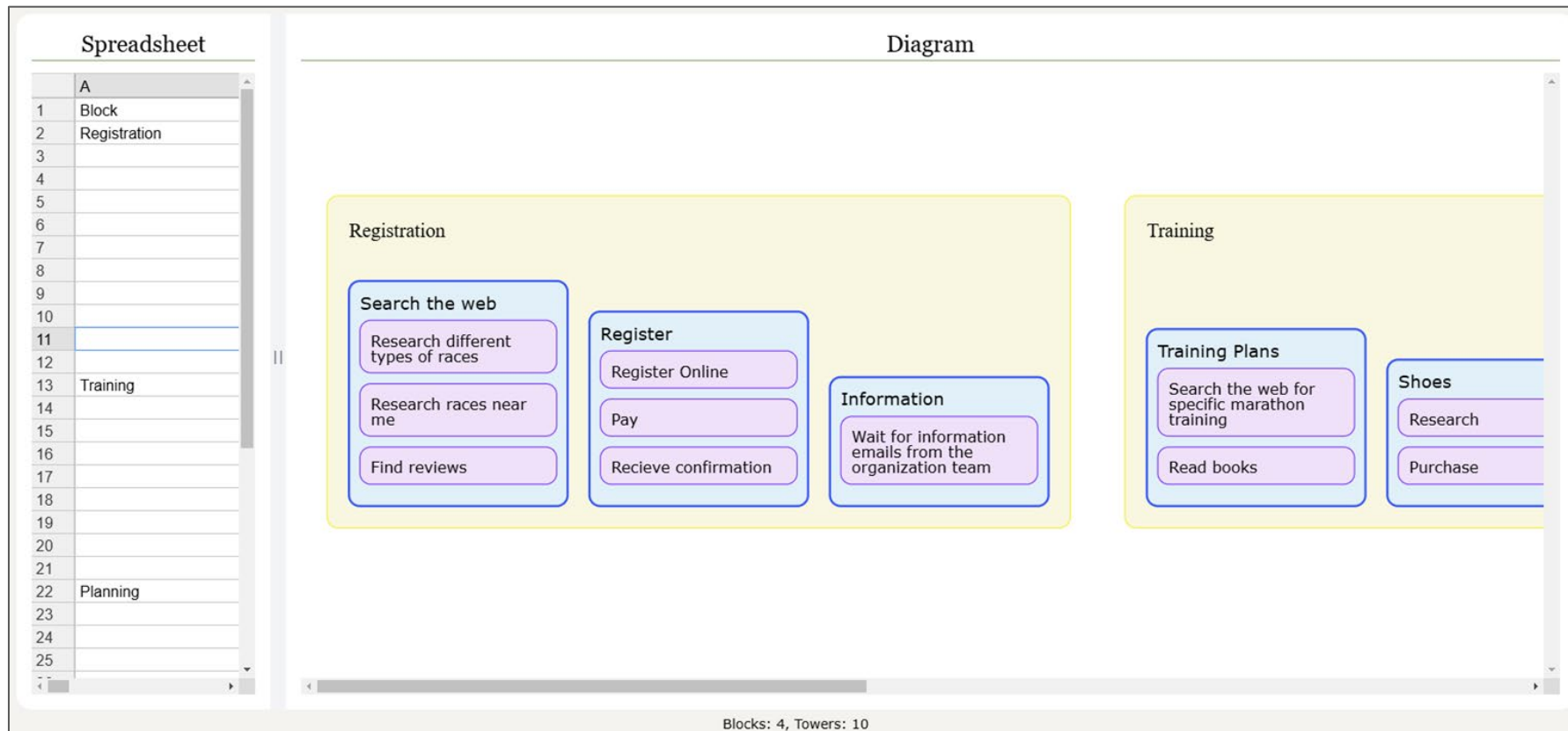
Skyline - Download and Language

- Valid SVG and XLSX download.
- Multiple Language Support.



Skyline - Diagram View

- Slider to resize diagram and spreadsheet panels.
- Block and Tower counter on the bottom of the panels.



Skyline - Showcase

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<https://youtu.be/254VMFQqMTQ>

Conclusion

- Built improved MMD Generator from scratch.
- Possible future work:
 - Alignment Diagram compatibility.
 - Possibility to manually move boxes around.

Thank you for listening.

- Questions?
- Suggestions?