

# DES370

## Assignment 2

- Software Analysis Report and Redesign

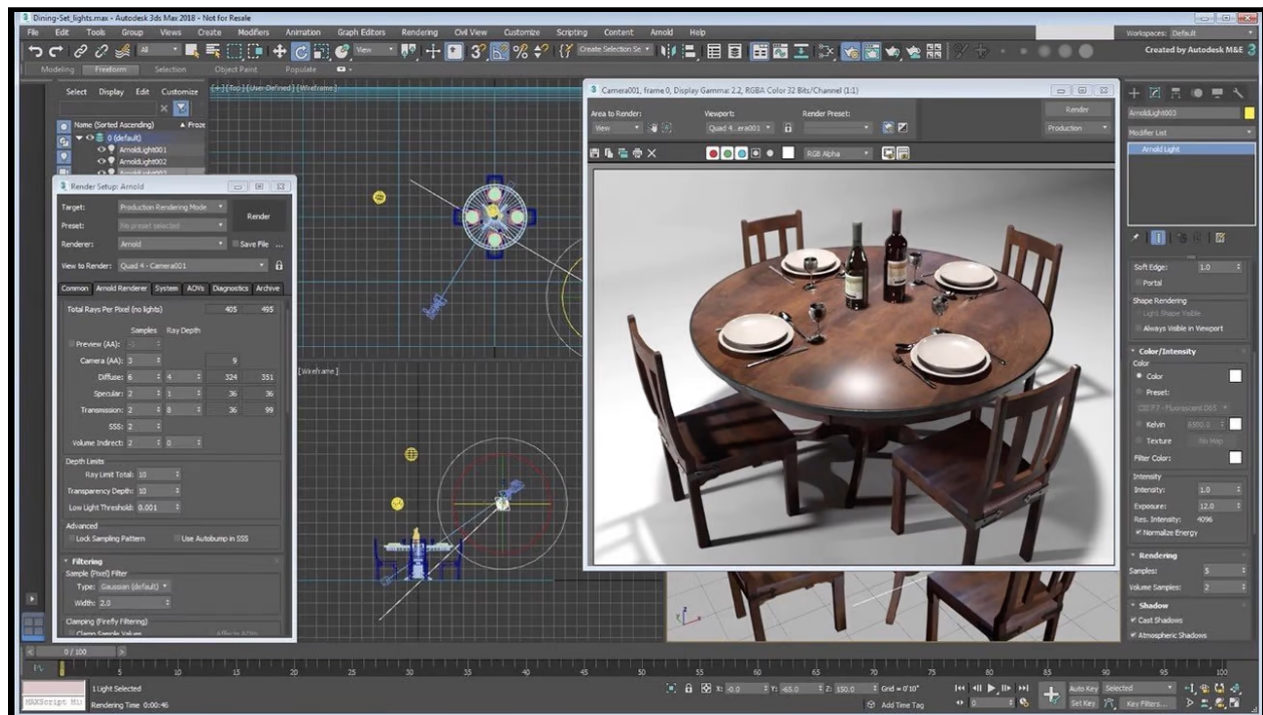


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# Software Summary

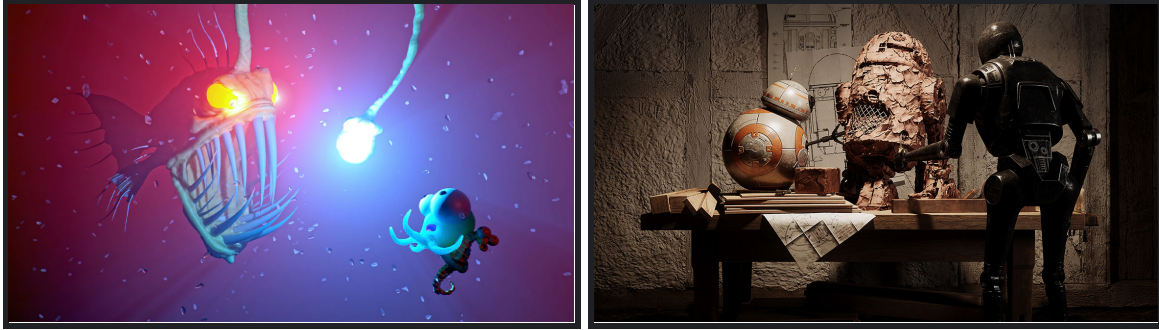


Autodesk 3ds Max is a 3D computer graphics program developed by Autodesk Media and Entertainment as a tool for creating 3D animations, models, games and images.

## Overview

- 3ds Max is a 3D polygon modelling powerful program that allows its users to model down their vision to the last detail by offering a robust and adaptable toolkit for creating premium designs with complete artistic control. Its users can create massive worlds in games, visualize high-quality architectural renderings, model finely detailed interiors and objects, as well as bring characters and features to life with animation and visual effects.
- 3ds Max presents users with a wide variety of features to use in its toolkit. One of these features includes a built-in Arnold renderer and flexible plugin architecture that can handle more sophisticated characters, sceneries, and effects. Its tools can help the user save time while working on interactive light mixing, colour correction, and lens effects on the rendered image. As a compute engine that can scale content production, the software also gives its users more free reign in scaling their workflow with automation and plug-ins.





## Target Audience & Demographics

- Primary Audience: Creative 3D professionals in the architecture or digital media industry
  - Eg. Architectural designers, game asset artists, animators
  - Age range: 17+
  - Other software used: Autodesk 3ds Max, ZBrush, Blender
  - Time spent per session: 4-8 hours
- Secondary Audience: Anyone who is interested in 3D production
  - Eg. TV commercial studios, students
  - Age range: 17+
  - Other software used: Autodesk Maya, Adobe Photoshop, Adobe Illustrator
  - Time spent per session: 1-3 hours

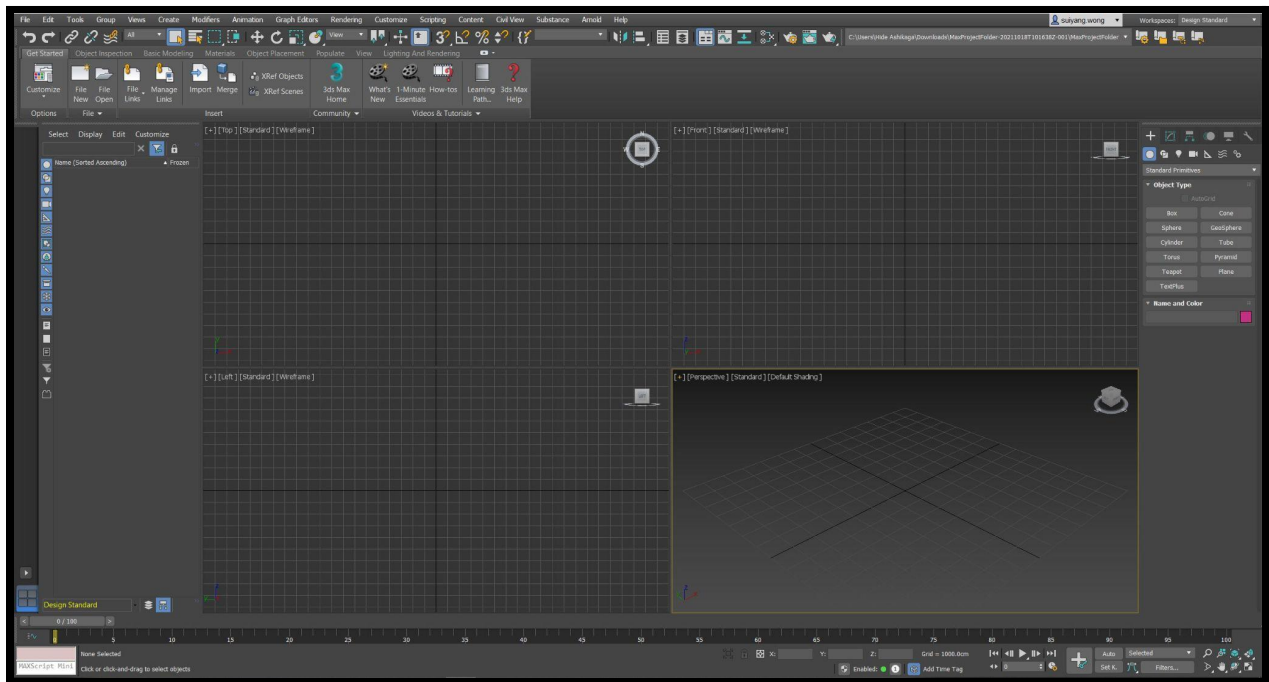
## Product Summary

3ds Max is valued by veteran 3D artists for its robust toolkit and features, complementing a diverse workflow opportunity between asset creation and exporting into other software. However, as a professional 3D computer graphics software that has stood the test of time, one thing that seems to be missing is its focus on UI/UX.

This comes from the fact that older users (those that have been using the software from the start) have already been acclimated to the workflow of older 3ds Max versions. While may seem trivial, this also acts as a double-edged sword towards newer users, who are new to 3D computer graphics and may deter them from engaging in its steep learning curve in the first place.

The points below will highlight the specific aspects of what we think 3ds Max's UI may improve on:

# Aesthetics



## 1. UI

The UI aesthetics of the software generally adopt a grey monochrome colour with bright colours like yellow to highlight selected screen views within the viewport area while buttons will have their background darkened if hovered over.

- **Positives**

- Keeping the colour scheme mostly monochrome will not distract the user and let them focus on the models that they are working on.
- Contrasting colours of the highlighted buttons help users take note of where to find them as well as the bound of the viewport.

- **Negatives**

- Due to the monochrome colour scheme, UI elements can be easily seen as a huge clump of information for new users which would be very overwhelming.

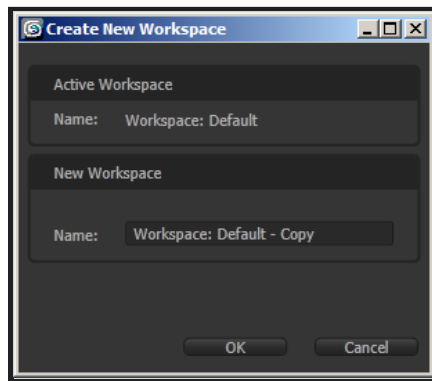
# Software Analysis

## 1. Workspace Selector

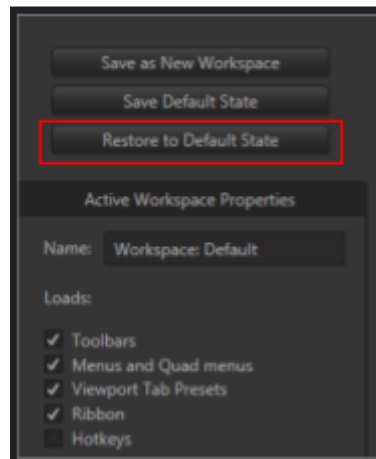
A workspace here is defined as the interface setup which includes any combination of toolbars, menus, quad menus, viewport layout presets, the ribbon, the hotkeys, and the workspace Scene Explorer. By using the Manage Workspace window in the Workspace Selector, the user can create as many different workplaces as desired.

- **Positives**

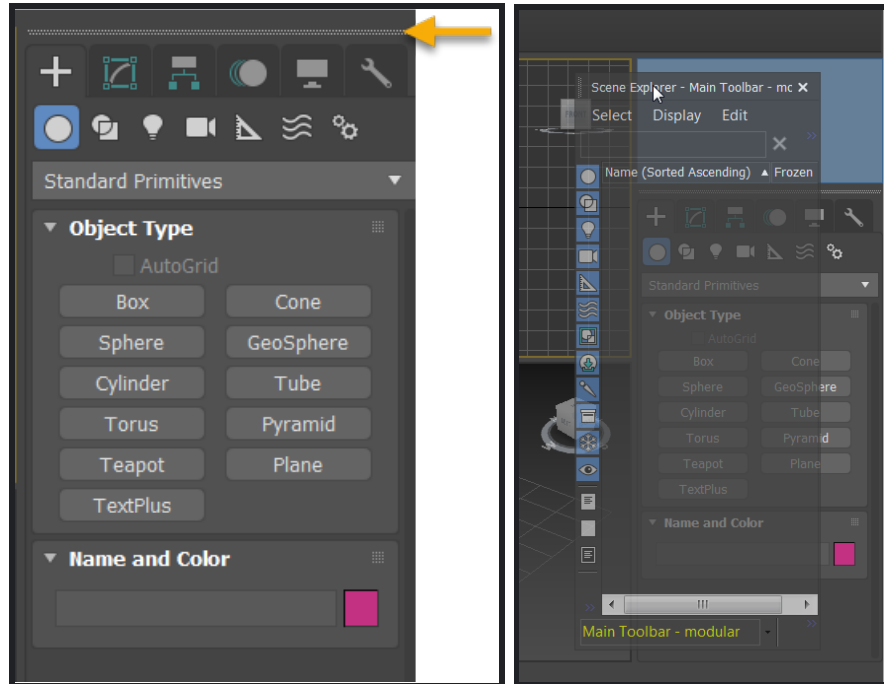
- i. Allows quick switching between different interface setups. This includes creating, saving or even duplicating new workspaces.



- ii. Able to restore custom arrangements of toolbars, menus, viewport layout presets, etc.



- iii. The menus can be docked or floated. Windows can also be stacked adjacent to one another.



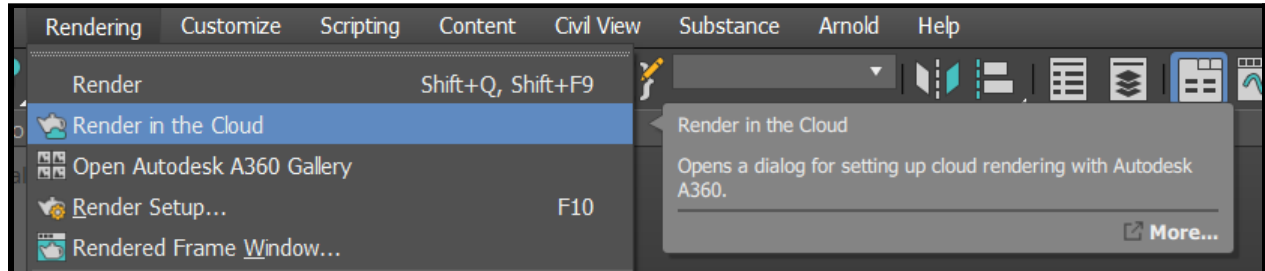
iv. Can save and load hotkeys depending on the workspace.

- **Negatives**

- The user can only float the active tab and not a group of tabs.
- The size of menus and toolbars are often fixed or have limited minimizing capabilities.

## 2. Menu Bar

Found directly below the main window's title bar, the title of each menu indicates the purpose of the commands on the menu.



- **Positives**

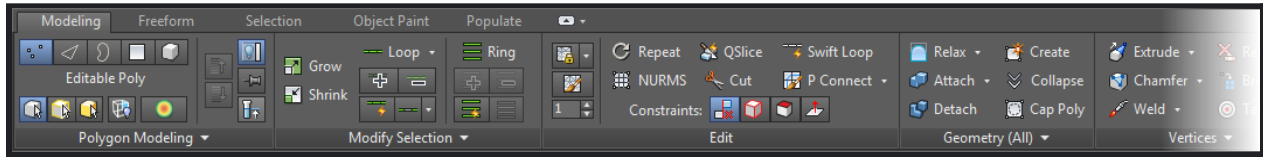
- i. All the functions are classified and grouped with the consideration that users would immediately know the type of functions available to them within that category.
- ii. Icons give a good depiction of the function within that class, shortcut key is given even without the user having to hover over that particular function.
- iii. Hovering over a function for a short duration pops up an information bubble to notify users of its functionality. The user can get more information by clicking on the "More" button.

- **Negatives**

- i. There are inconsistencies throughout the hovering function, not all functions will have an information bubble popup when hovering over it.
- ii. Description sometimes does not give enough information to the users.

### 3. The Ribbon

The ribbon is a toolbar that can dock in a horizontal or vertical orientation or float in a vertical orientation.



- **Positives**

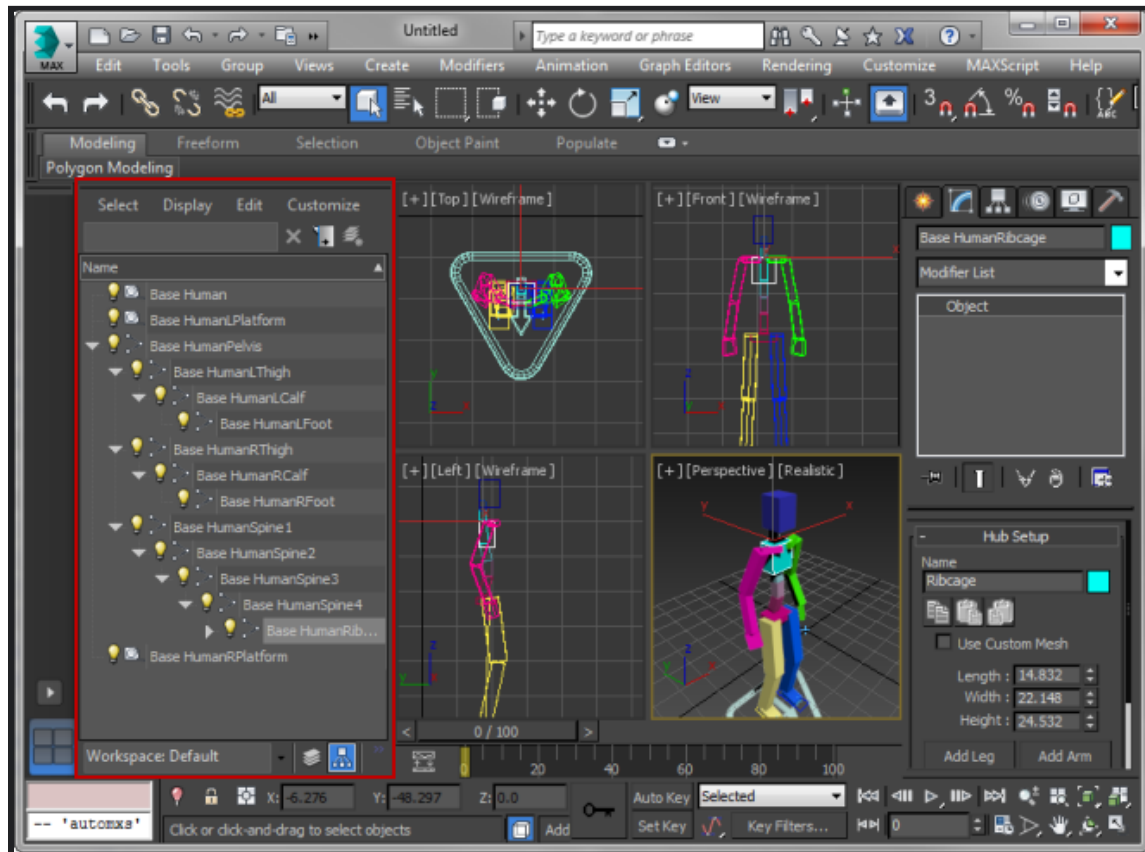
- i. Since the orientation can be changed intuitively, users can freely customize some aspects of the UI to fit each user's needs.
- ii. In addition to the previous point, more commonly used tools are present in the ribbon, giving users easier access to all these tools at their fingertips.

- **Negatives**

- i. With the wide variety of tools at the user's disposal, this makes the ribbon extremely cluttered. Users, who are mostly unfamiliar with the software, can easily find themselves overwhelmed with the influx of information.
- ii. In addition to the use of a monotonous colour, the contrasting visuals of the buttons are inconsistent and can lead to unnecessary confusion among users as to which category the tools belong to and ultimately cost precious work time.
- iii. The alignment of the icons are very inconsistent which contributes more to the "messy" look that already exists in the ribbon due to the clustering of icons.

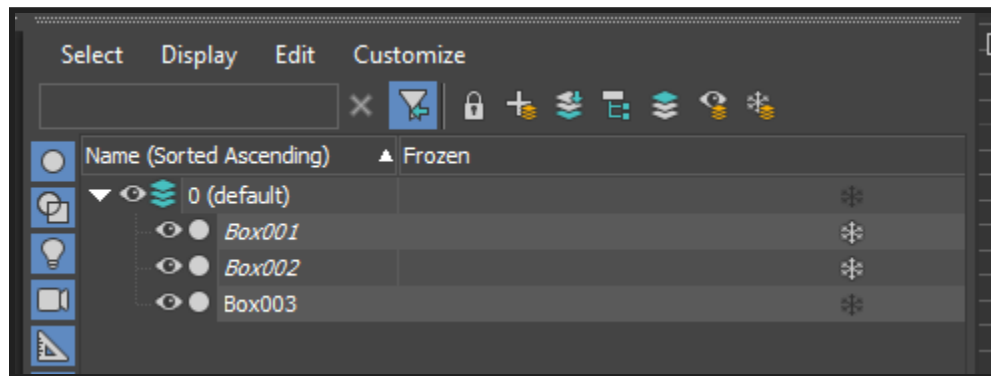
## 4. Scene Explorer

In 3ds Max, Scene Explorer offers a modeless interface for viewing, sorting, filtering, and selecting objects, as well as renaming, removing, hiding, and freezing objects, establishing and changing object hierarchies, and mass-editing object properties.

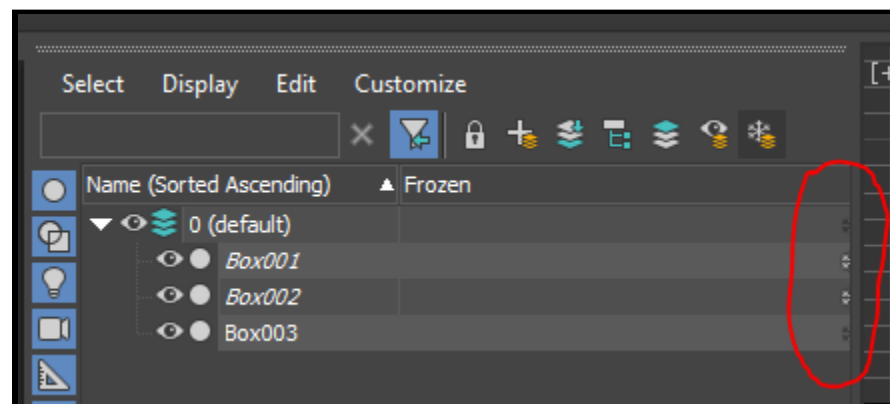


- **Positives**
  - i. The alignment of objects shifts to tell the user of their hierarchy (Parent-child relationship). This behaviour follows most other similar software that includes this feature, appealing to familiarity.
  - ii. Objects in the even position are shaded a darker grey to provide better contrast between other objects in the hierarchy.
- **Negatives**
  - i. The frozen button tab does not follow the alignment of the text, the button gets cut off when the menu is shrunk.

- ii. The subtle difference between Group and Layer tabs, and their layout, makes it easy for users to use the wrong feature despite the considerable different uses of both tabs.



*Before Shrinking*

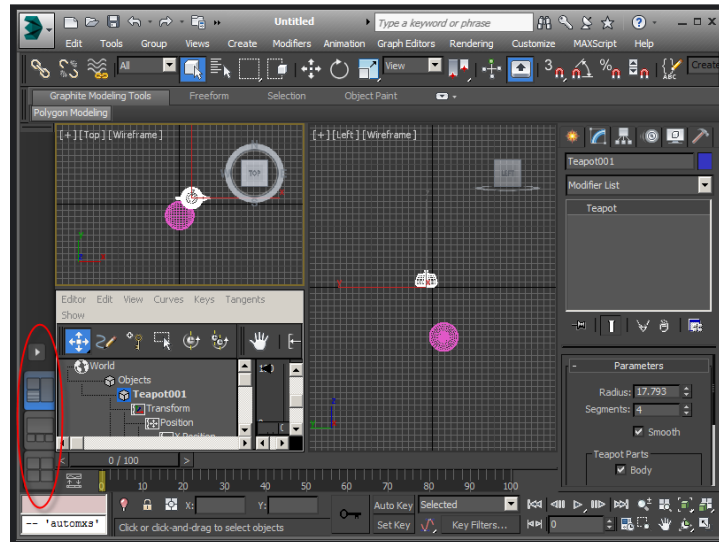


*After Shrinking*



## 5. Viewport

Viewport Layouts provides a custom tab bar that allows the user to rapidly switch between any number of alternative viewport layouts. For example, the user may have a four-viewport layout zoomed out for a simultaneous overall view of the scene from various angles, as well as many full-screen closeup views of various portions of the image. The ability to activate any of these with a single click can significantly speed up the user's process. The layouts are preserved with the scene, so users can go back to their own viewports arrangement whenever they want.



- **Positives**

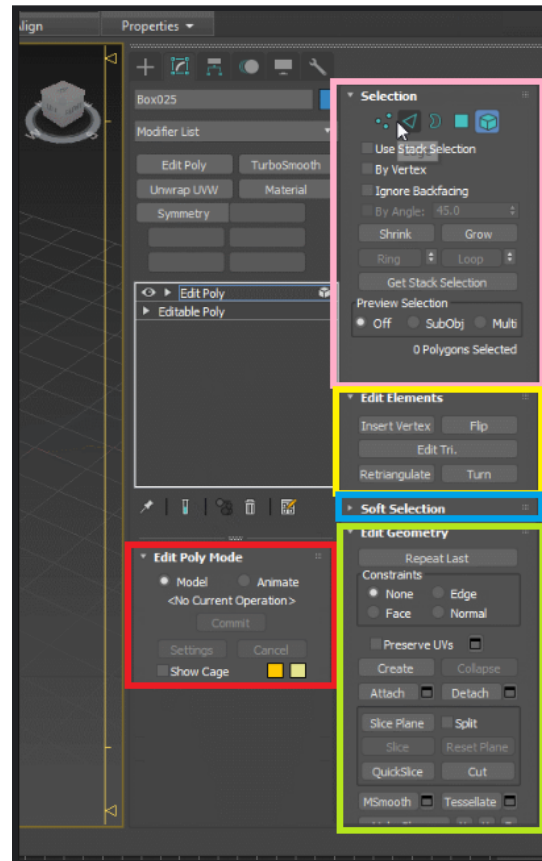
- Fully customisable to fit user's needs, from having multiple viewports (up to 4) within a single window, being able to resize any of them, and with different modes and different perspectives of the object you are working on.
- Various presets allow users to adopt a viewport layout that is popular amongst users so that they can always revert to that pre-set with a press of a button, should any unwanted changes be made.

- **Negatives**

- Isolation mode has different activation and deactivation shortcut keys and is not made clear by the software.
- Only one viewport may be active at any given time, and changes are not reflected in real-time to the other viewports.

## 6. Command Panel

The command panel is made up of six user-interface panels that offer you access to the majority of 3ds Max's modelling tools, as well as certain animation options, display options, and other utilities. At any one moment, just one panel is displayed. A separate panel is displayed by clicking its tab at the top of the command panel.



- **Positives**

- i. All pieces of information are displayed as much as possible, each subsection is divided into classes so that users can adjust the parameters individually within the class.
- ii. Users can rearrange the subsections depending on which section they find they might be using more so that it will always appear on the top of the list when selecting.

- **Negatives**

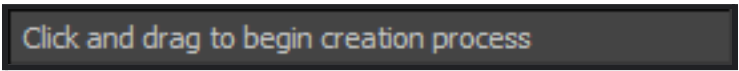
- i. Due to insufficient ways to separate the groupings of the different subsections, it can be hard to differentiate each section for newer users.

- ii. The way the command panel / Inspector is made, users usually have to break away from the viewport when modelling to select what type of modifiers they would want to apply to the model. Due to this, it can break the flow of modelling.

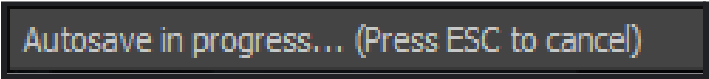
## 7. Status-Line and Prompt Line

A dark rectangular box with a thin white border containing the text "1 Object Selected" in a light blue, monospaced font.

The number and kind of object(s) chosen are displayed in the Status-Line which is directly above the Prompt Line at the bottom of the screen.

A dark rectangular box with a thin white border containing the text "Click and drag to begin creation process" in a light blue, monospaced font.


The prompt line, which is situated below the status line at the bottom of the window, gives continuous feedback based on the current cursor location and program activity. While 3ds Max is saving an auto backup file, the prompt line displays this information:

A dark rectangular box with a thin white border containing the text "Autosave in progress... (Press ESC to cancel)" in a light blue, monospaced font.

- **Positives**

- i. The user is informed clearly of what is happening currently within the software and provides feedback for users to know if their action is executed.

- **Negatives**

A dark rectangular box with a thin white border. On the left, there is a small pink square with the text "MAXScript Mini" in white. To the right of the pink square, the text "1 Object Selected" is displayed in a light blue, monospaced font. Below this, the text "Click or click-and-drag to select objects" is displayed in a smaller, light blue, monospaced font.

- i. This element is rather small and isolated at the edge of the screen which may cause some users to miss it entirely.
- ii. The placement of such prompts are usually expected to be placed at the direct corner of the software, however, there is a MAXScript command input at the corner. This results in the element being in a position that is unfamiliar to the users based on Gestalt's Law of Familiarity.

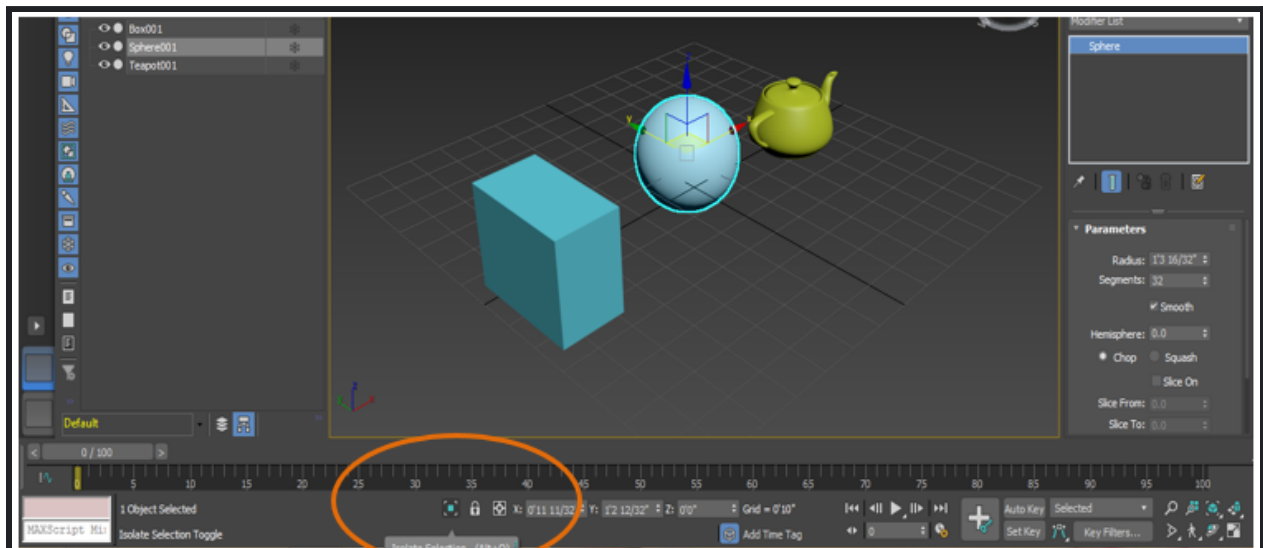
## 8. Isolate Selection Toggle and Selection Lock Toggle



Isolate Selection Toggle turns on and off the isolation model of selected objects.



The Selection Lock Toggle enables and disables selection locking. In a complicated scenario, locking the selection stops the user from accidentally picking anything else.



- **Positives**

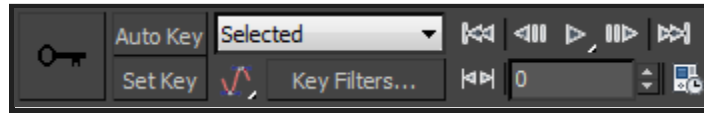
- The button is clearly defined by a contrast in colour compared to the rest of the surrounding buttons.
- The button is highlighted when active and not highlighted when inactive, informing users of its state.

- **Negatives**

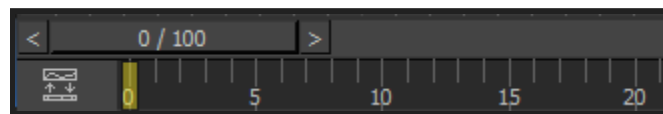
- The buttons' placement is too close to the object's coordinates. They are not closely associated and break the Law of Proximity.
- Since the viewport menu already has an option to isolate a specific object, having another button to specify this tool feels redundant and an overload of information.
- Small size and subtle contrast in selected elements make the selection difficult to notice without squinting.

## 9. Animation and Time Controls

The primary animation controls, as well as the time controls for animation playback inside viewports, are located at the bottom of the program window, between the status bar and the viewport navigation controls.



The time slider and track bar, which are located on the status bar to the left of the primary animation controls, are two more significant animation controls.



- **Positives**
  - i. Practical and understandable.
  - ii. Clear distinction of which ones are buttons, dropdowns and input fields.
- **Negatives**
  - i. Elements are unevenly spaced apart which breaks the Law of Proximity and can easily confuse users.

## 10. Projects Toolbar

The Projects toolbar makes it easy to keep all of the user's files organized for a certain project.





Recent Projects List allows the user to quickly select from the project folders recently used.



- **Positives**

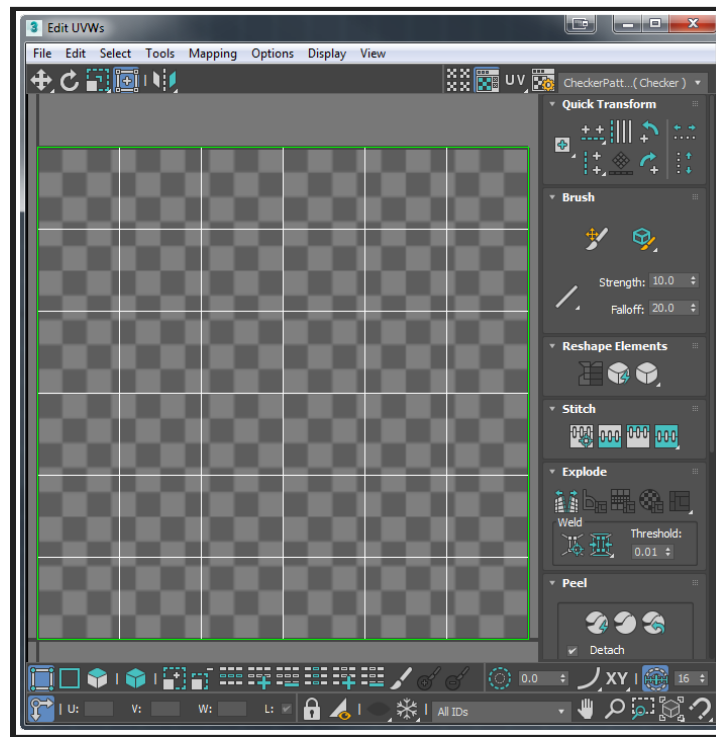
- i. Organized.
- ii. Project folder name and location are distinguished.
- iii. The first 2 icons starting from the left are easy to understand as they follow the Law of Past Experience.

- **Negatives**

- i. The last two icons,  “Create Default” and  “Create from Current” does not allow the user to understand its functionality at first glance. It seemed more related to hierarchy and organization.

## 11. UV Editor


A window that shows texture coordinates displayed as vertices, edges, and polygons, collectively known as sub-objects, is at the core of the UV editor, also known as the Edit UVWs dialogue. These are set to match the geometry of the mapped object by default, but users may modify their placements concerning the object mesh by changing the coordinates. This allows the users to fine-tune how your texture mappings "fit" their models.



- **Positives**

- i. A multitude of tools is easily accessible to the user since they are set on the bottom and right panels.

- **Negatives**

- i. Elements are not as neatly aligned and differentiated as they could potentially be.
- ii. Buttons like this  have a white triangle at the bottom right to indicate there are more options in a dropdown. However, in a bunch of elements that are already difficult to differentiate their boundaries, the white triangle can be easily missed and passed off as part of the icon.

# Goals

Improving the modelling workflow so that it becomes natural for the users when they are working and do not need to break out from the viewport while modelling could lead to a shift of focus. The main goal is to make things as efficient as possible when modelling in 3ds Max.

## Issues

Issue Type	Category	Severity
Workspace Selector tabs seem disjointed and are not properly grouped as individual entities and cannot be manipulated as such.	Workspace Selector	High Priority
Vague information is displayed in the hovering tooltips that pop up inconsistently on some buttons and not on others.	Menu Bar	High Priority
The ribbon is cluttered with tool buttons, most of which are not often used. This influx of unnecessary information can lead to cognitive overload.	Layout	High Priority
Scene explorer elements are not properly aligned and lack distinctive traits between the group and layer features. This may cause users to perform a wrong action.	Scene Explorer	High Priority
The act of customising viewport windows is not intuitive. Users may become lost after making a mistake when controlling the viewports.	Viewport	Medium Priority



Command Panel is unnecessarily made up of 6 separate tabs (3 rows, 2 columns). The inconsistency in the layout creates a confusing experience which may hinder user experience.	Command Panel	Medium Priority
The font used by the modifiers list in the configure modifier panel has its header using the same size and weight as the rest of the options. This creates a very incoherent experience and might cause a hindrance	Command Panel (configure modifiers panel)	High Priority
Status line prompts are tucked away at the edge of the screen, which may be missed by some users. This results in the misinterpretation of the lack of feedback which may confuse users.	Status Line/Prompt Line	Low Priority
Isolation button elements are slightly redundant due to the existing isolation command in the viewport. This is further emphasised by its small size.	Isolation Mode	Low Priority
In addition to the isolation button's size, the current layout has the buttons situated beside the transform and makes it possible for the user to misclick when trying to manipulate a 3D element's transform.	Isolation Button Element	Medium Priority
Media buttons are small and are clustered together closely, making it hard for users to see them.	Animation/Media Panel	Medium Priority
The contrast of the media	Animation/Media Panel	Medium Priority


buttons remains the same throughout despite being active or inactive.		
The Unwrap UV Editor exists as a separate screen. While this is not an issue by itself, the button layout that is introduced lacks consistency with the layout from the original screen.	Unwrap UV Editor	Medium Priority
Dropdown buttons in the Unwrap UV Editor are also represented as white triangles, which seem to be part of the button icon at first.	Unwrap UV Editor	Medium Priority

# Personas

## Primary Persona: Samantha Kim (The Sage)

### Samantha Kim

3D Asset Creator



Meticulous Caring Knowledgeable

Understanding Kind

#### Goals

- Creating the next best world in 3D games.
- Seek out more knowledge to improve herself.
- Analysing and understanding to impart knowledge upon others in the future.

#### Frustrations

- Unable to obtain knowledge and solutions after facing problems for a long duration.
- Having the 3D software crash in the middle of her work.
- Spending large amounts of time to create something simple due to the 3D software's lack of features.

#### Bio

Samantha Kim has been one to seek and explore things unknown to her. Her curiosity towards the aspects of arts and digital media led her to become a 3D Artist in game studios.

Samantha's usual line of work includes model texture creation, rigging, and lighting. As an experienced user of 3D modelling software, Samantha does not stop at one software and is actively seeking out to use other software that can improve her workflow efficiency.

*"Seek and you shall receive the truth."*

Age: 23  
Work: 3D Artist  
Family: Single  
Location: Korea  
Character: The Sage

#### Personality

Introvert	Extrovert
Thinking	Feeling
Sensing	Intuition
Judging	Perceiving

#### Motivation

Incentive	
Fear	
Growth	
Power	
Social	

#### Brands & Software

ZBRUSH blender AUTODESK 3DS MAX

#### Preferred Channels


Traditional Ads	
Online & Social Media	
Referral	
Guerrilla Efforts & PR	

Samantha's persona exemplifies a seasoned professional in the industry; someone who routinely deals with 3D modelling and its related software.

## Secondary Persona: Edwin Price (The Innocent)

# Edwin Price

Aspiring 3D Artist



Optimistic Persistent Carefree

Righteous Faithful

### Goals

- To create works in the future that can bring joy to others.
- Learn the proper process of 3D media creation.
- Living everyday without worries.

### Frustrations

- Restrained in creativity.
- Punished for the slightest mistakes.
- Unable to finish work on time due to software issues.

### Bio

Previously trained in 2D art from Singapore Polytechnic, Edwin Price is now aspiring to be a 3D Artist. He has taken 1 step closer to his goal by enrolling into DigiPen (Singapore), majoring in Digital Arts and Animation.

During his free time, Edwin practices creation of 3D models based on lectures in class as well as sourcing for online video guides to improve himself further.

"Life is short, enjoy it to the fullest!"

Age: 24  
Work: Student  
Family: Single  
Location: Singapore  
Character: The Innocent

### Personality

Introvert	Extrovert
Thinking	Feeling
Sensing	Intuition
Judging	Perceiving

### Motivation

Incentive	20%
Fear	40%
Growth	80%
Power	10%
Social	60%

### Brands & Software

SketchUp Ps Ai

### Preferred Channels

Traditional Ads	10%
Online & Social Media	80%
Referral	30%
Guerrilla Efforts & PR	10%

As for Edwin's persona, he is a student with a substantial background in design and visual communications. Recently, he wanted to broaden his skill set and delve into 3D modelling. However, he is not as well versed in the 3D modelling pipeline and therefore, is unfamiliar with the software.

## Tertiary Persona: Tachibana Asuka (The Rebel)

# Tachibana Asuka

Interior Space Designer



"これが私の生きる道" (This is my way of life)

Age: 27

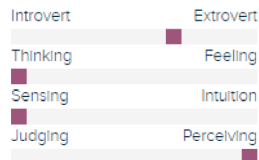
Work: Interior Designer

Family: Married

Location: Japan

Character: The Rebel

### Personality



Troublemaker

Creative

Revolutionary

Fearless

### Goals

- Spreading the name of her design.
- Creating a new type of interior design that does not conform to the current standards.
- Birthing designs that fix some common problems the industry currently has.

### Frustrations

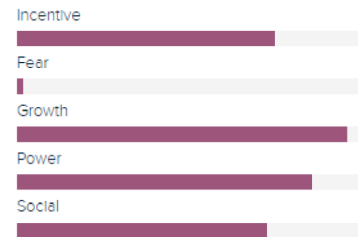
- Being oppressed by figures of higher authority that rejects her design with no way out.
- When her design does not impress her customers.
- When she is not trusted by others.

### Bio

Tachibana Asuka has created designs that surprised customers with a revolutionary convenience towards daily lifestyle. She goes against the standards of designing layouts as she believes that the future should have a design style that fits it.

Asuka uses 3D modelling software that comes with presets alongside game engines to fast track her process of creating interior spaces and she can easily modify them with those tools. Due to her nature of creating revolutionary designs, she requires software that are responsive and user friendly as she does not like to waste time on the smaller and finer details.

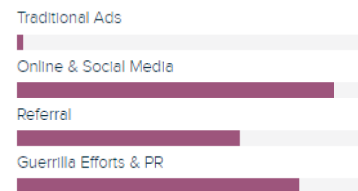
### Motivation



### Brands & Software



### Preferred Channels

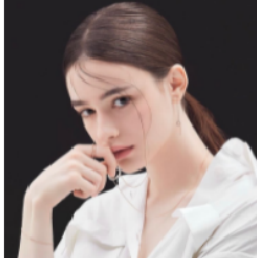


As a tertiary persona, Asuka's use of 3D modelling software is mainly to create simple geometries quickly that have a simplified workflow.

## Negative Persona: Ava Robertson (The Ruler)

# Ava Robertson

## Fashion Model



Charismatic

Authoritative

Motivator

Empathetic

Self-Conscious

### Goals

- Win at fashion contests.
- Become globally recognised.
- Maintaining her elegance and beauty.

### Frustrations

- Wardrobe malfunction.
- Wearing non-designer brand clothes.
- Being gifted inconsistent sized clothes.

### Bio

A model since the age of 9, Ava Robertson appeared in TV shows featuring dazzling styles of fashion which gave a new meaning to life for those who pursue branded clothing. She aims to bring her fashion style across globally and share the art of beauty.

Her main role of work is modelling for the latest and renowned fashion designs as her features bring out the most of it. Being a very self-conscious person, Ava takes extreme care of her appearance by watching her diet stringently.

*"Beauty is everything."*

Age: 23  
Work: Fashion Model  
Family: Single.  
Location: USA  
Character: The Ruler


### Personality

Introvert	Extrovert
Thinking	Feeling
Sensing	Intuition
Judging	Perceiving

### Motivation

Incentive	
Fear	
Growth	
Power	
Social	

### Brands & Influencers



### Preferred Channels

Traditional Ads	
Online & Social Media	
Referral	
Guerrilla Efforts & PR	

As a negative persona, Ava is not a direct customer of 3d modelling software.

# Task Flow

Refer to the external file as the image is too huge to be placed here.

## Test Schedule

#	Playtester	Observer	Time
1	Icebreaking <ul style="list-style-type: none"><li>- Check if the playtester is alright with being recorded</li><li>- Short introduction of playtester</li></ul>	<ul style="list-style-type: none"><li>- Note down introduction related to target demographics</li></ul>	1-2 mins
2	Interview <ul style="list-style-type: none"><li>- Ask about target demographics question if missed out during the introduction<ul style="list-style-type: none"><li>- Age Range</li><li>- Other software used</li><li>- Financial status (If they are comfortable)</li></ul></li><li>- Time spent per session</li></ul>	<ul style="list-style-type: none"><li>- Note down answers to interview questions</li><li>- Note down any additional information playtester will provide</li></ul>	1-2 mins
3	Playtesting <ul style="list-style-type: none"><li>- Introduce 3ds Max to the testers (Skip process if they already know about the software)</li><li>- Assign tasks to playtesters</li></ul>	<ul style="list-style-type: none"><li>- Observe and record reactions and frustrations per task</li><li>- Specify if there are any non-intended methods of accomplishing the task</li></ul>	10-15 mins
4	Closing thoughts <ul style="list-style-type: none"><li>- Acquire feedback regarding the prototype such as thought processes, ways of improving and their overall experience when using the prototype.</li></ul>	<ul style="list-style-type: none"><li>- Record acquired feedback</li></ul>	3-5 mins

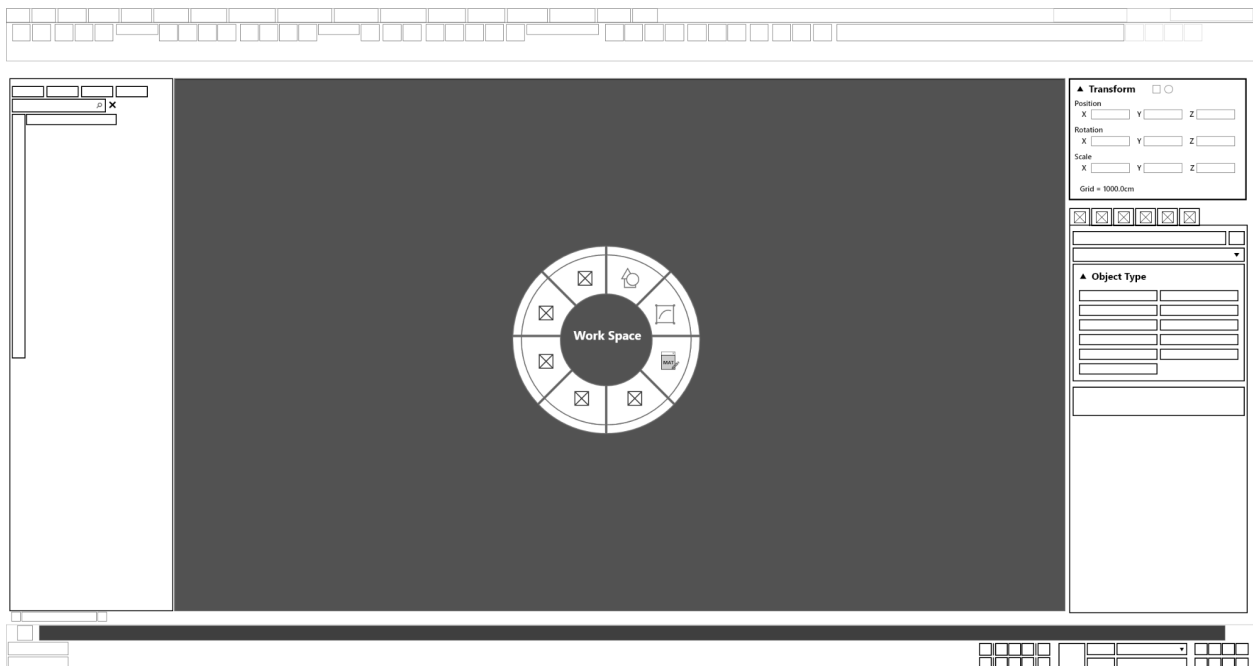
# Low Fidelity

## Tasks

- **Task 1: Create a cube, a sphere and a cylinder.**

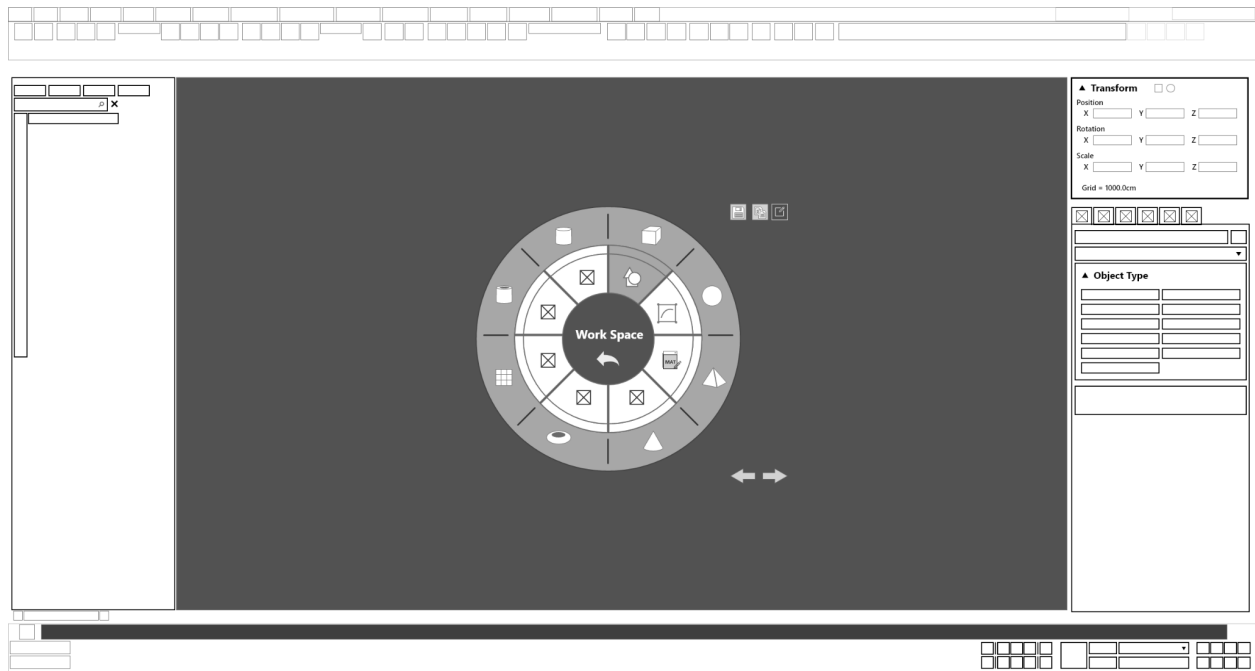


### 1. Base Radial Menu

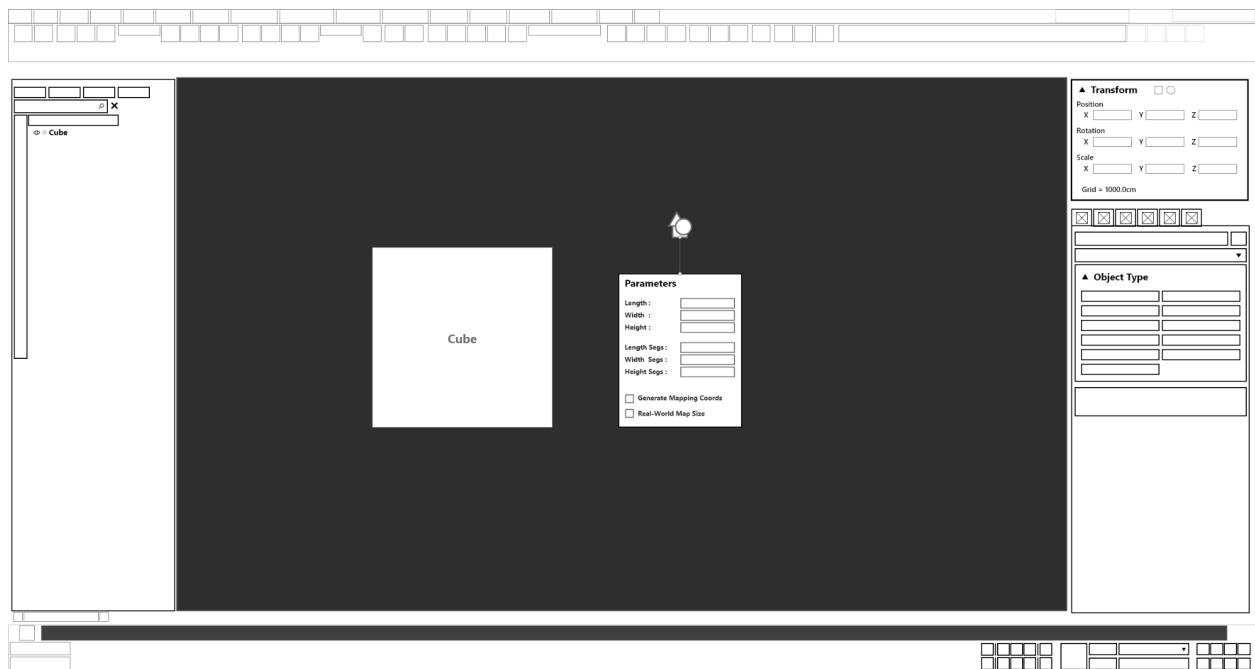




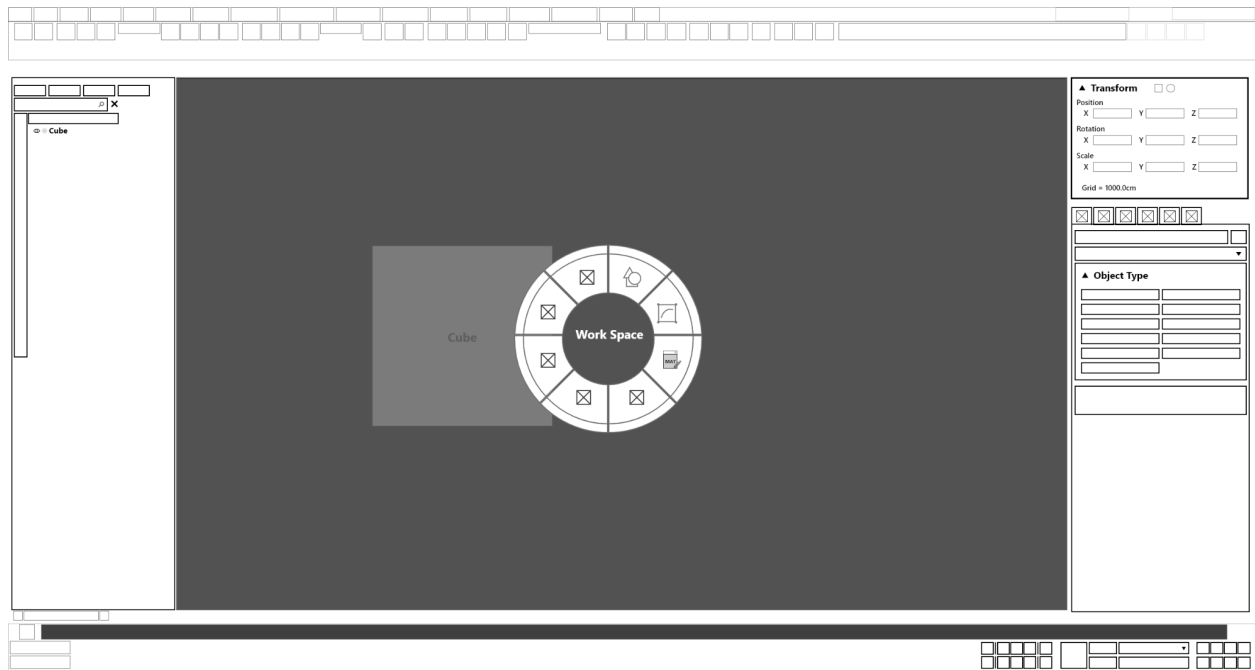
## 2. Sub-Radial menu with geometry selection.



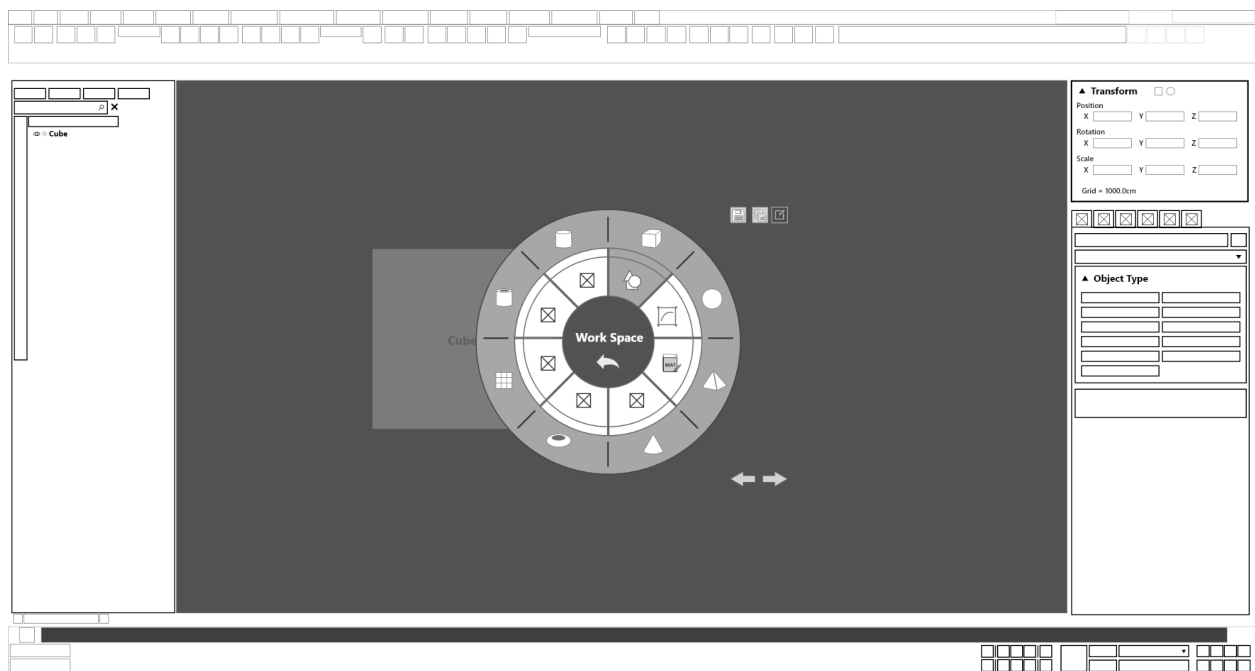
## 3. Cube created, proportions of the cube can be set directly upon creation.



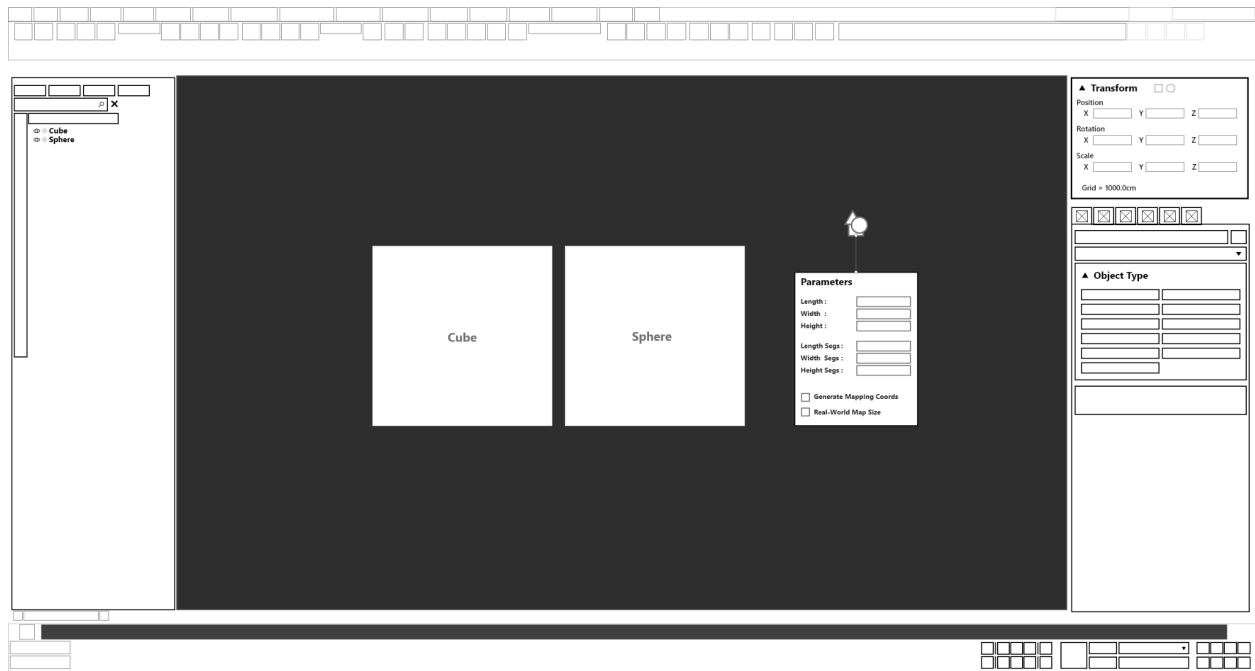
#### 4. Base Radial Menu



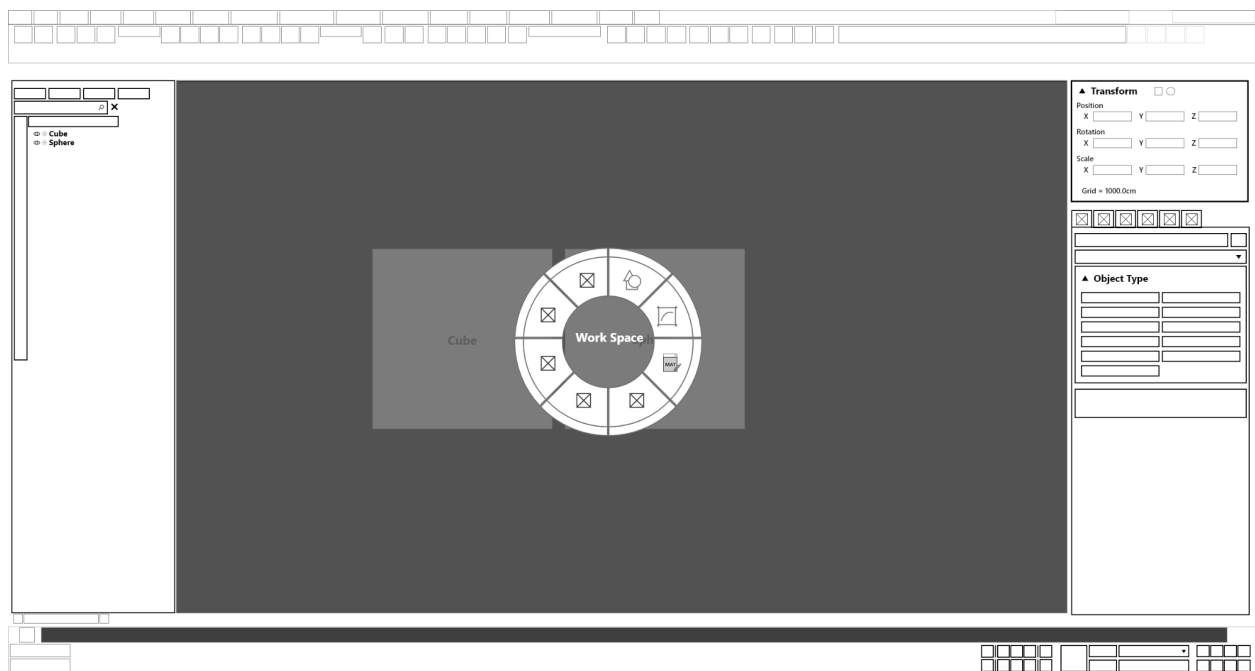
#### 5. Sub-Radial menu with geometry selection.



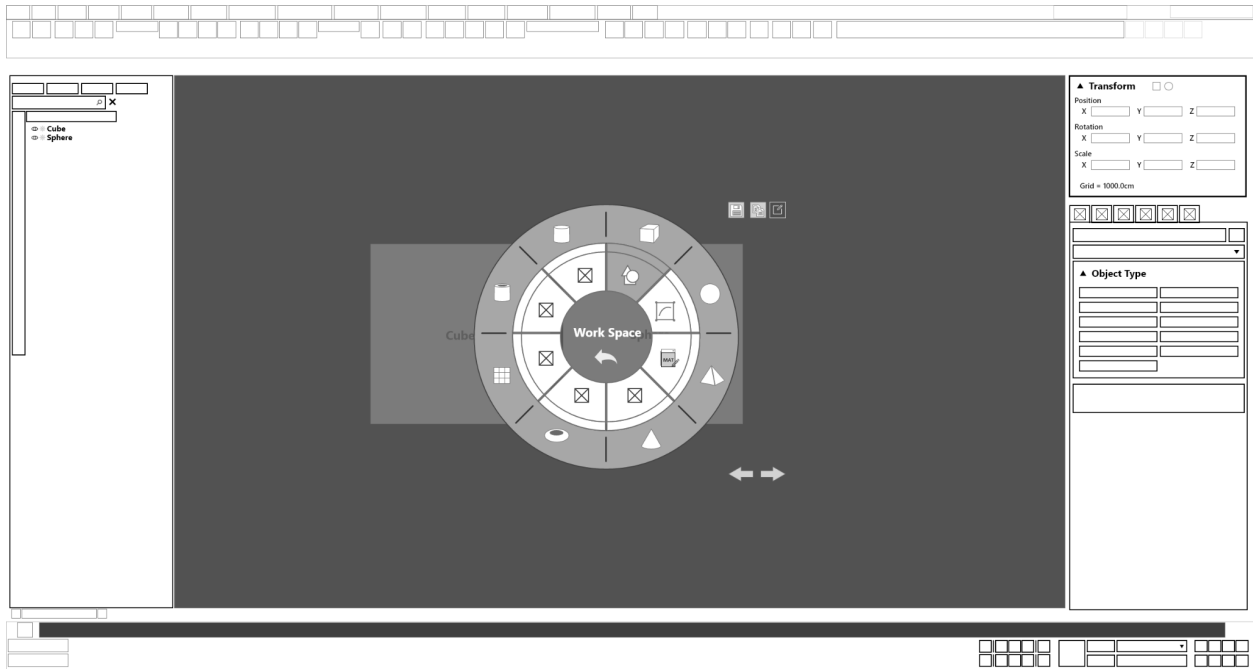
## 6. Sphere created.



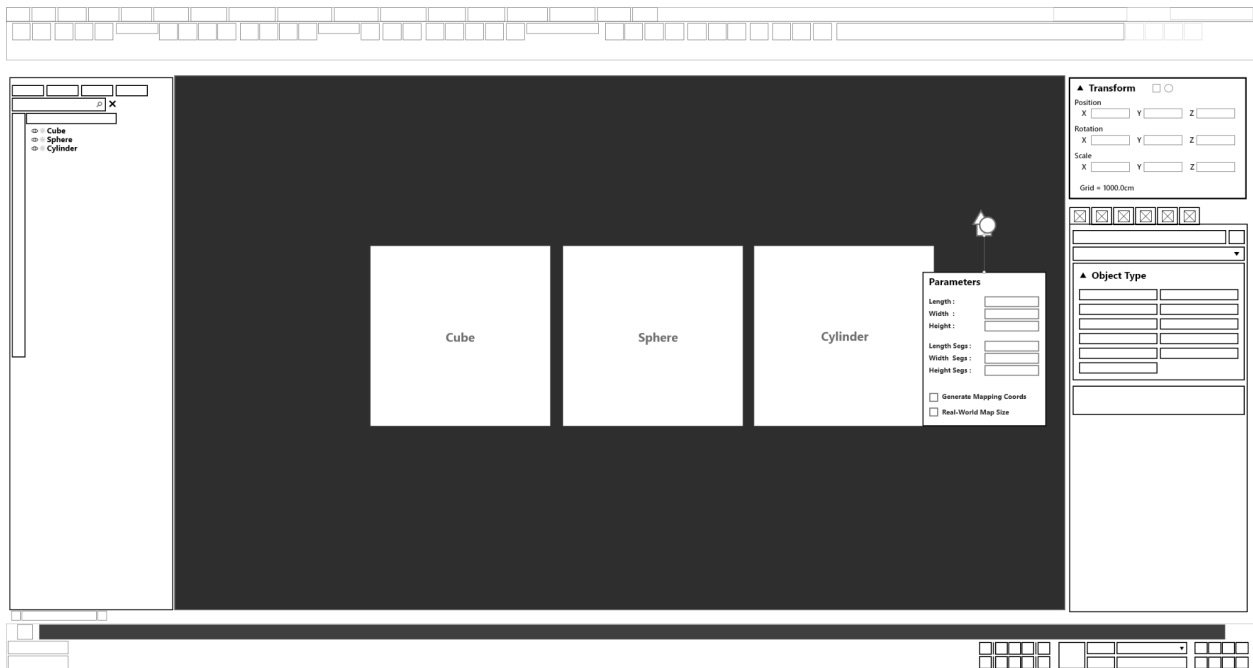
## 7. Base Radial Menu



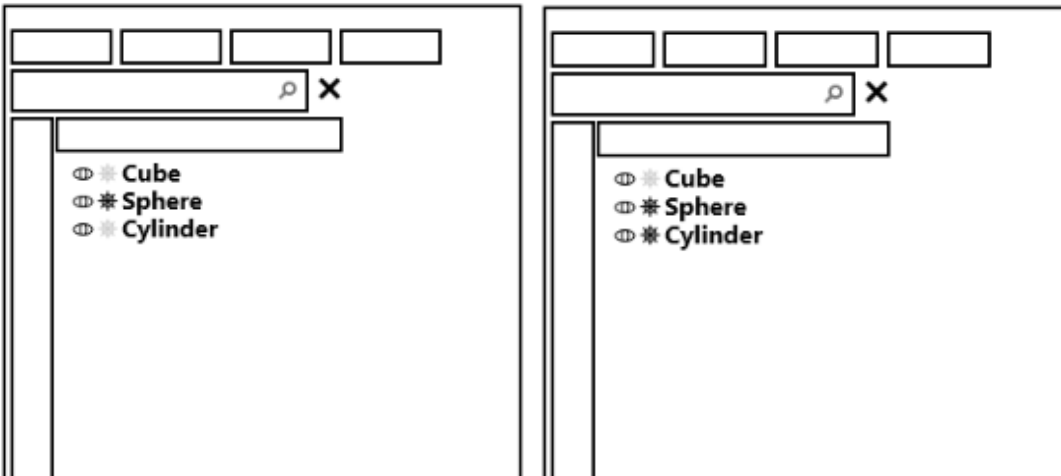
## 8. Sub-Radial menu with geometry selection.



## 9. Cylinder created.



- **Task 2: Freeze the sphere and cylinder.**

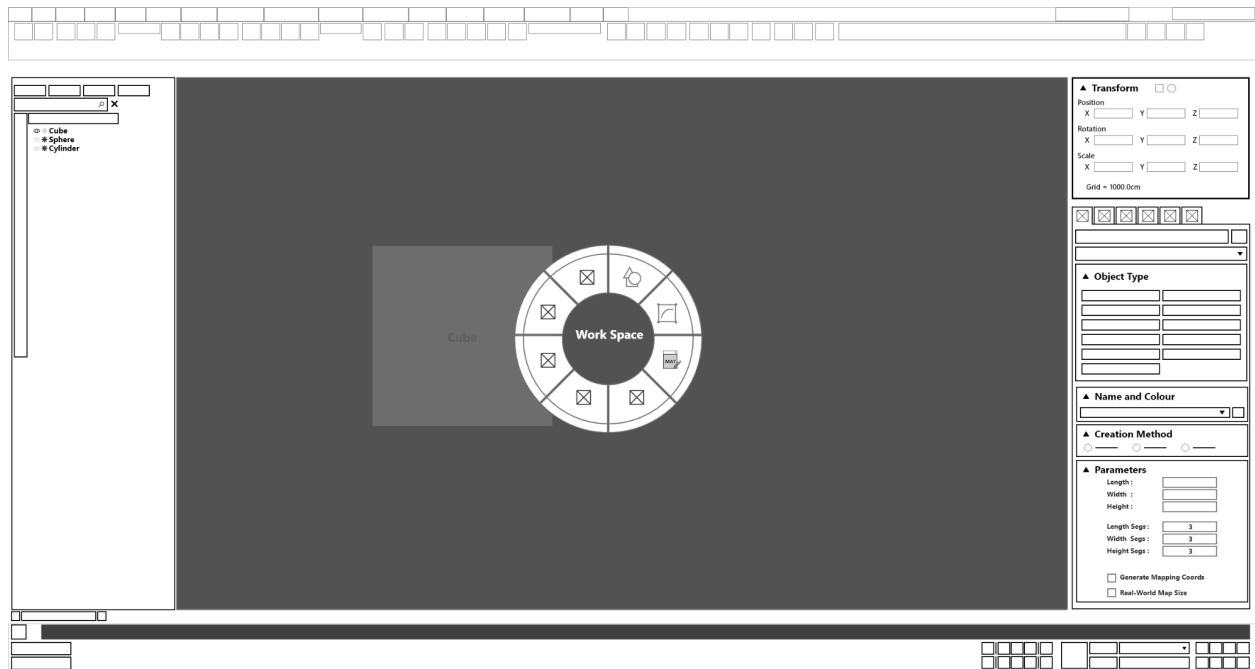


- **Task 3: Isolate the cube and set the cube to have 3 lengths, width, and height segments.**

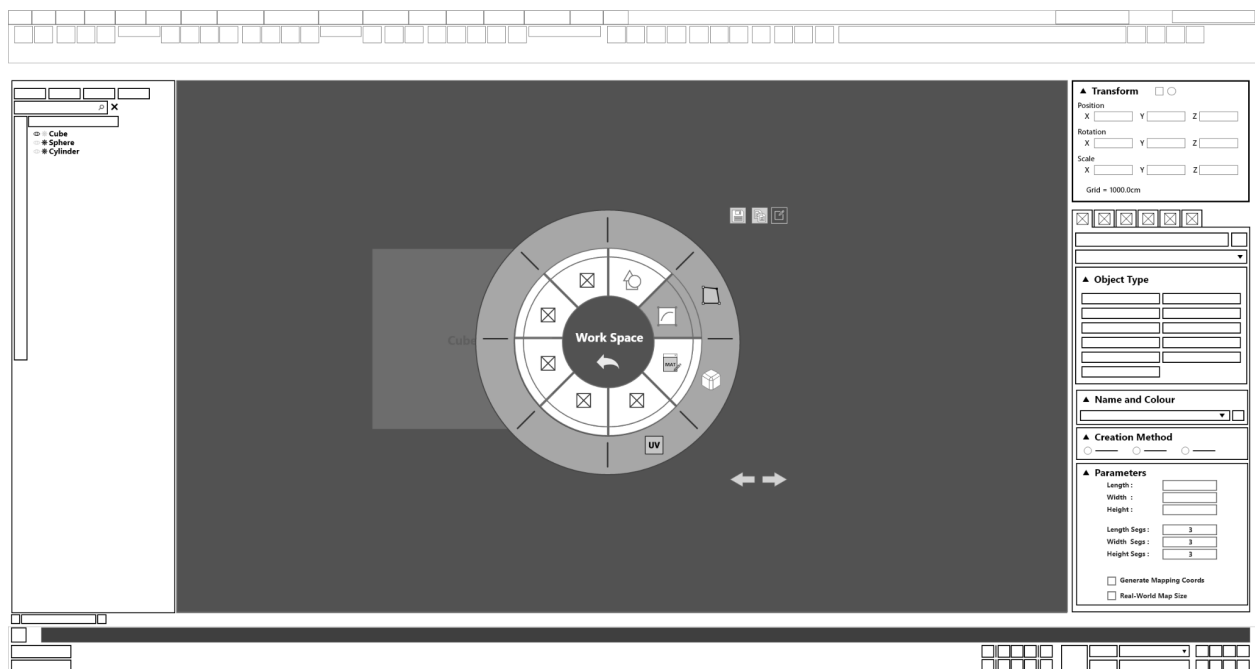
<p>▲ Name and Colour</p> <p><input type="text"/> <input type="button" value="X"/></p> <p>▲ Creation Method</p> <p><input type="radio"/> <input type="radio"/> <input type="radio"/></p> <p>▲ Parameters</p> <p>Length : <input type="text"/></p> <p>Width : <input type="text"/></p> <p>Height : <input type="text"/></p> <p>Length Segs : <input type="text" value="3"/></p> <p>Width Segs : <input type="text"/></p> <p>Height Segs : <input type="text"/></p> <p><input type="checkbox"/> Generate Mapping Coords</p> <p><input type="checkbox"/> Real-World Map Size</p>	<p>▲ Name and Colour</p> <p><input type="text"/> <input type="button" value="X"/></p> <p>▲ Creation Method</p> <p><input type="radio"/> <input type="radio"/> <input type="radio"/></p> <p>▲ Parameters</p> <p>Length : <input type="text"/></p> <p>Width : <input type="text"/></p> <p>Height : <input type="text"/></p> <p>Length Segs : <input type="text" value="3"/></p> <p>Width Segs : <input type="text" value="3"/></p> <p>Height Segs : <input type="text"/></p> <p><input type="checkbox"/> Generate Mapping Coords</p> <p><input type="checkbox"/> Real-World Map Size</p>	<p>▲ Name and Colour</p> <p><input type="text"/> <input type="button" value="X"/></p> <p>▲ Creation Method</p> <p><input type="radio"/> <input type="radio"/> <input type="radio"/></p> <p>▲ Parameters</p> <p>Length : <input type="text"/></p> <p>Width : <input type="text"/></p> <p>Height : <input type="text"/></p> <p>Length Segs : <input type="text" value="3"/></p> <p>Width Segs : <input type="text" value="3"/></p> <p>Height Segs : <input type="text" value="3"/></p> <p><input type="checkbox"/> Generate Mapping Coords</p> <p><input type="checkbox"/> Real-World Map Size</p>
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- **Task 4: Add an “Edit Poly” modifier to the cube using the radial menu.**

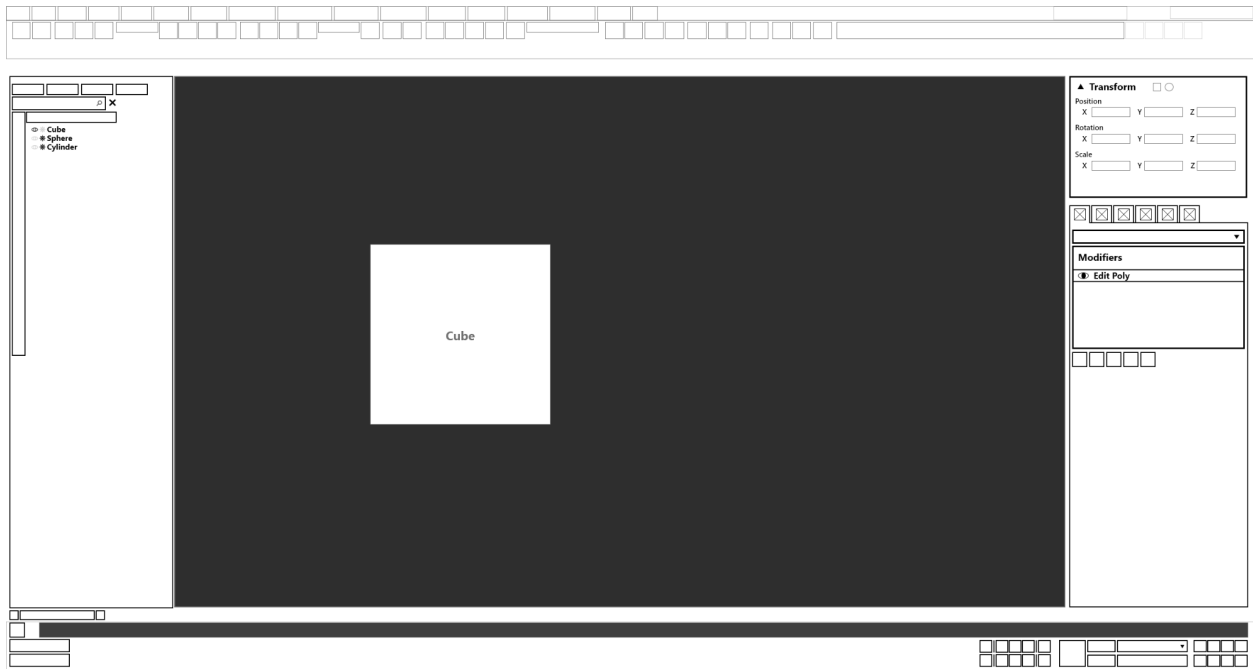
## 1. Base Radial Menu



## 2. Sub-radial menu (Adding modifiers)

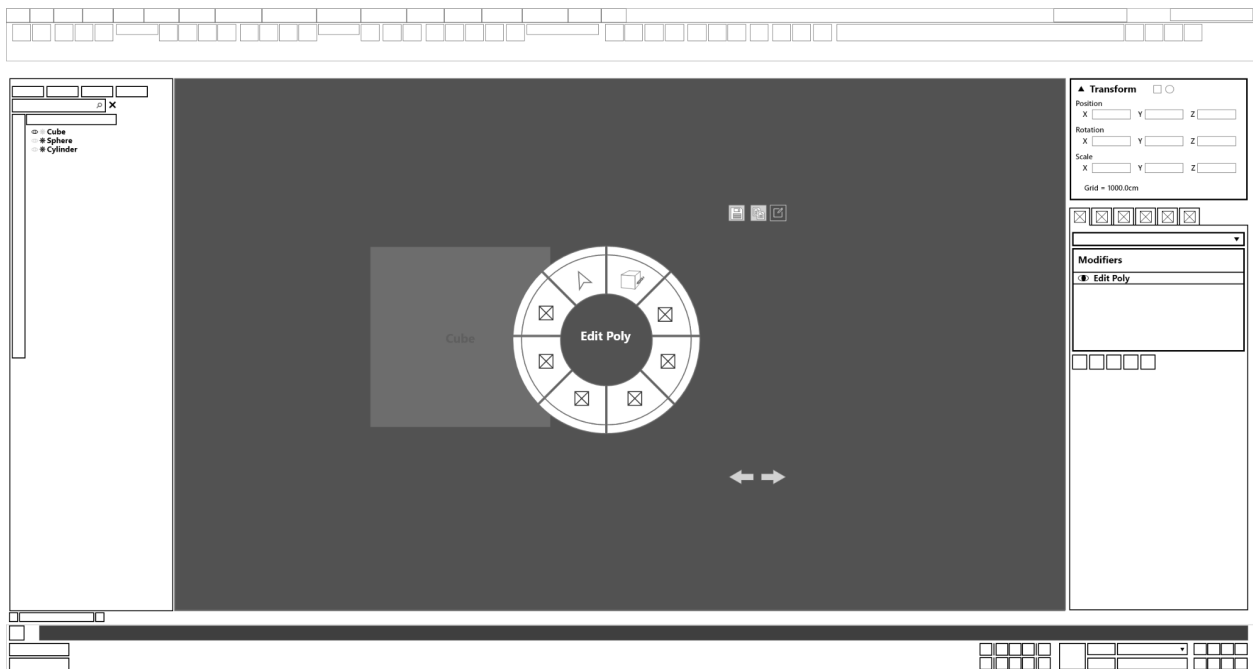


### 3. Command panel updating showing modifiers added. (Edit Poly)



### • Task 5: Extrude any face and chamfer any edge on the cube.

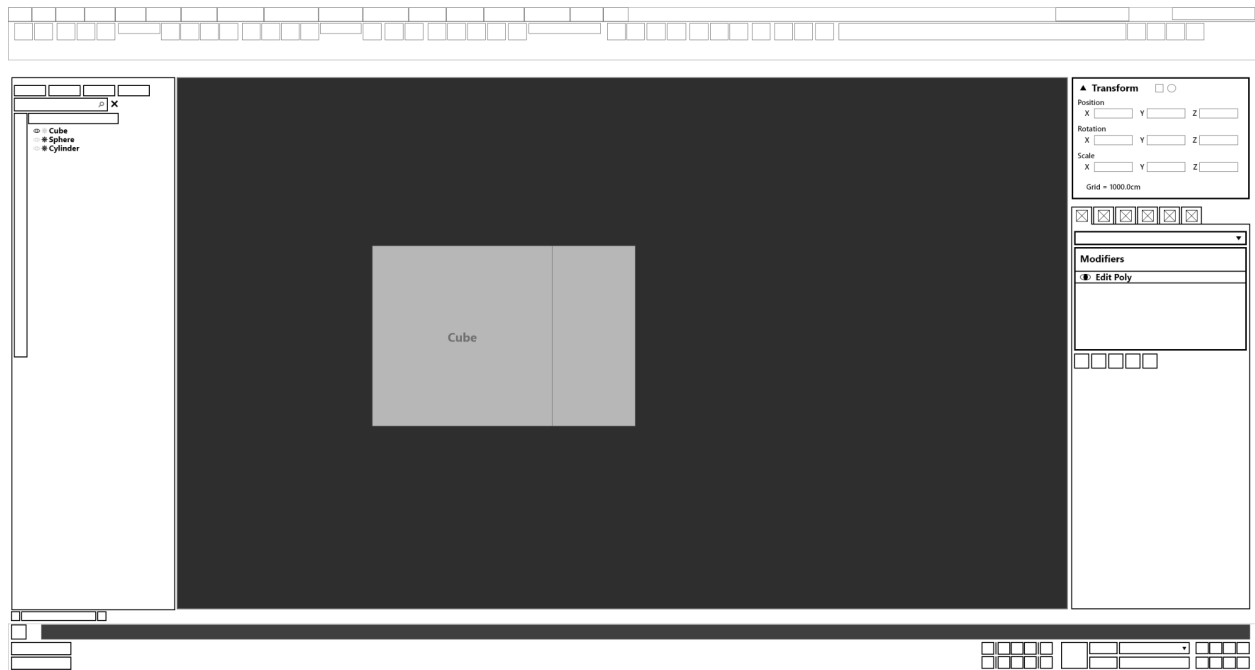
#### 1. Base Radial Menu of the modifier.



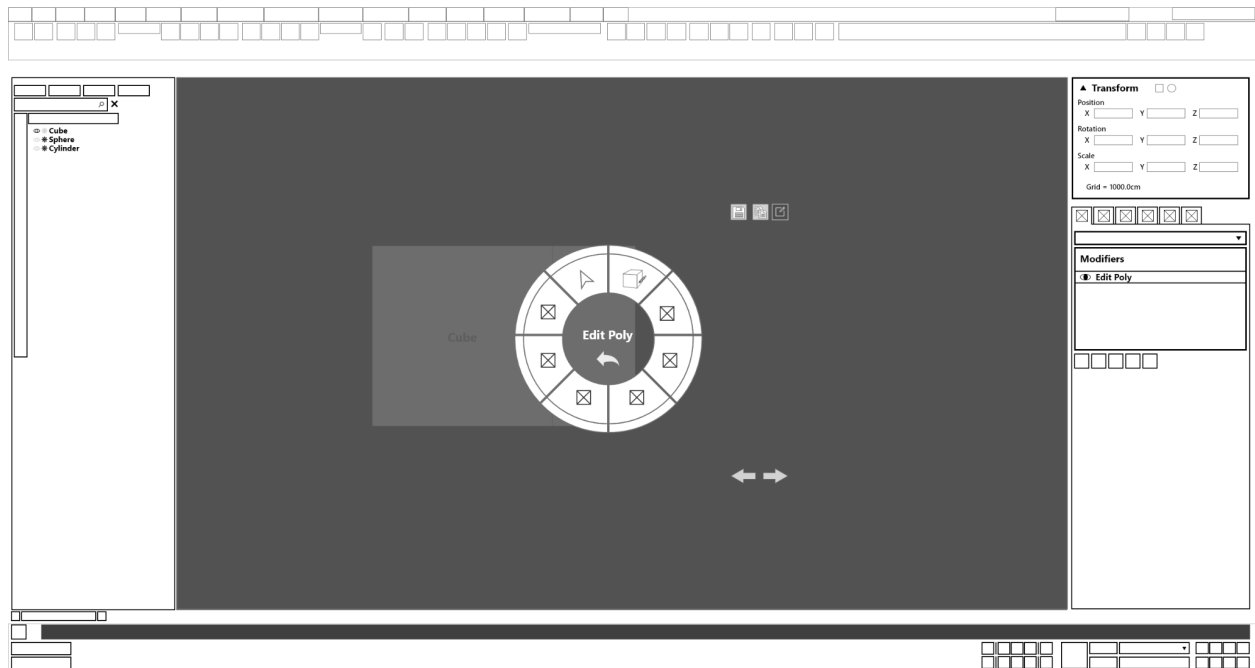
The image shows a 3D software interface with a top-down view of a cube. A circular 'Edit Poly' wheel is centered on the cube, featuring various icons for editing. The interface includes a top toolbar, a left sidebar with a hierarchy list (Cube, Sphere, Cylinder), a right sidebar with 'Transform' and 'Modifiers' panels, and a bottom status bar.



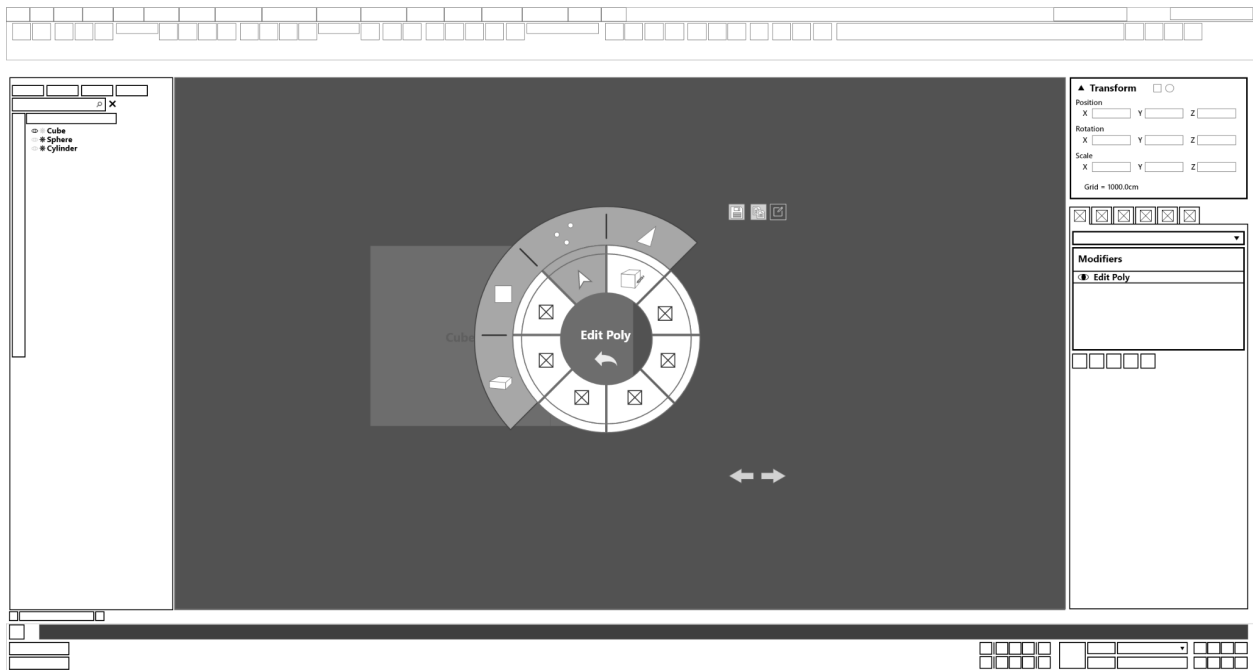
#### 4. Updated modification (Extrusion of a cube)



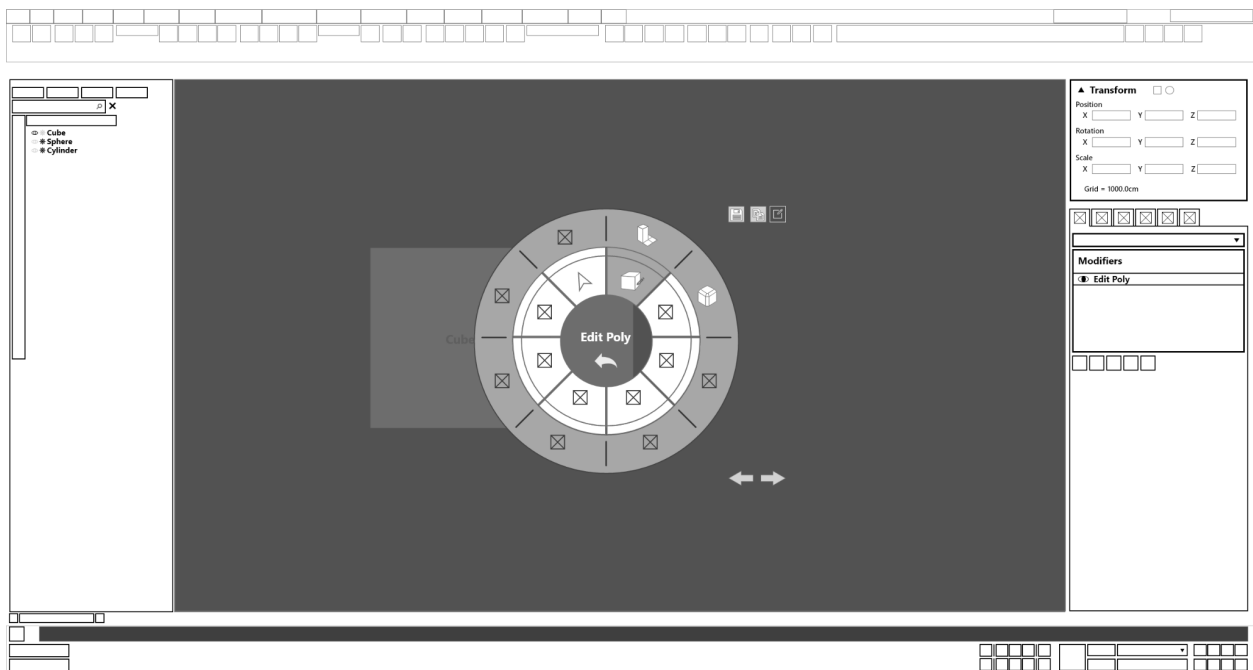
#### 5. Base Radial Menu of the modifier.



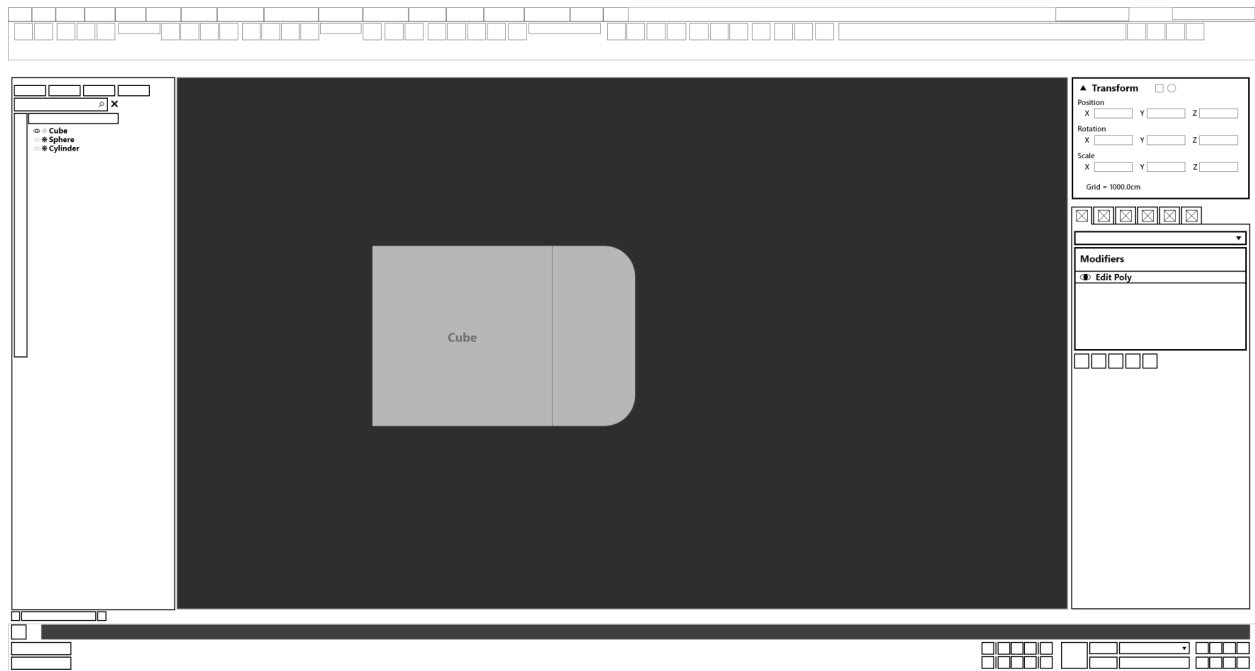
## 6. Sub-Radial menu (Selecting ways to Edit Poly)



## 7. After selecting the way, additional options appear to show further options of modification.

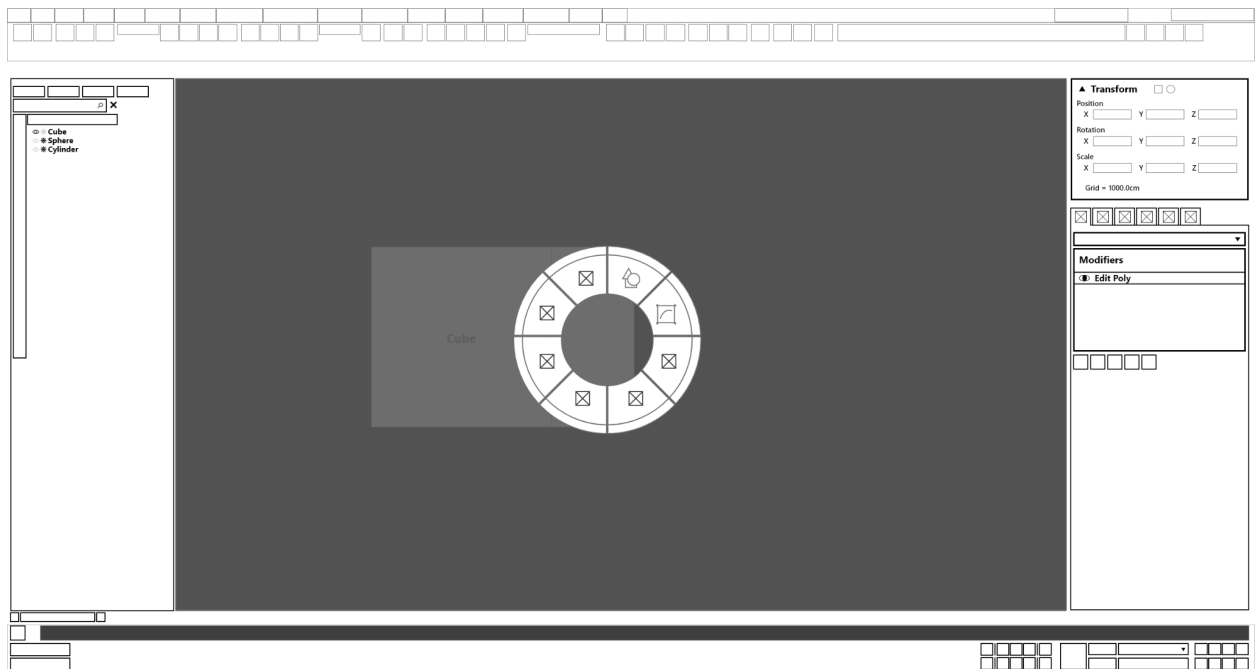


## 8. Updated modification (Chamfering of the cube)



## • Task 6: Add an “Unwrap UVW” modifier.

### 1. Base radial menu

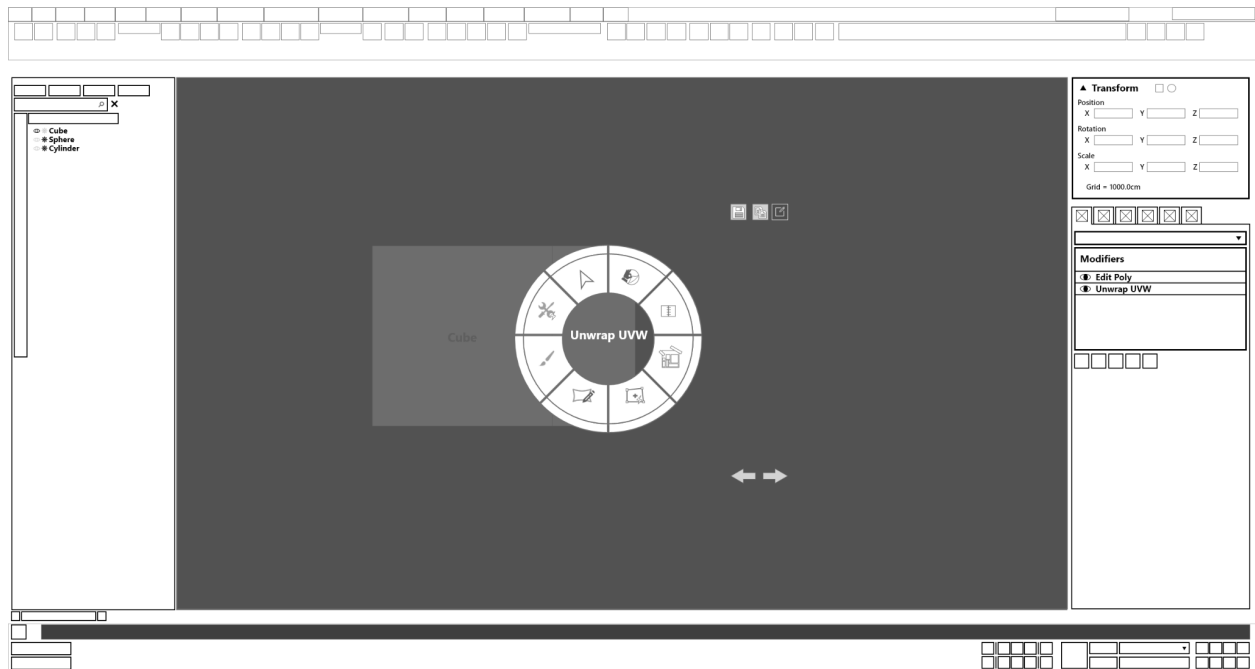


[illegible]

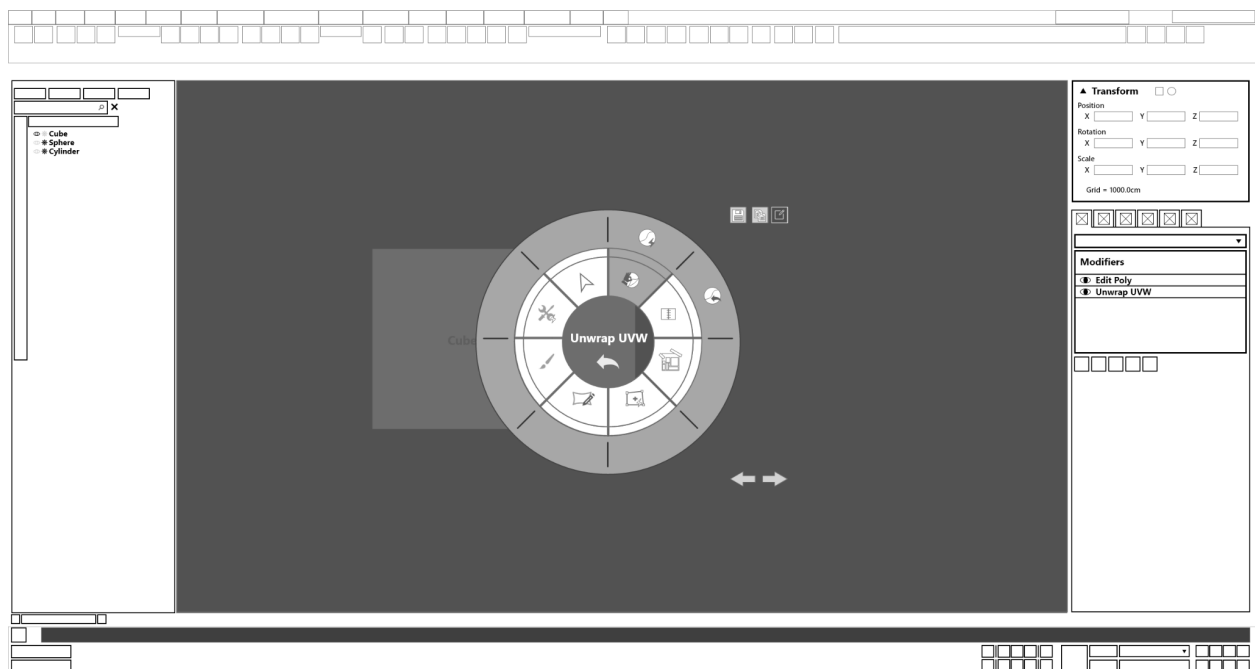
The screenshot shows the Blender 2.80.1 interface. The 3D Viewport displays a scene with a dark blue background. A light blue cube is positioned in the center, and a light red sphere is positioned to its right. The Outliner panel on the left shows the object hierarchy: Cube, Sphere, and Cylinder. The Properties panel on the right shows the Transform and Edit Poly modifiers. The Transform panel includes fields for Position (X, Y, Z), Rotation (X, Y, Z), and Scale (X, Y, Z). The Edit Poly panel includes a checkbox for 'Edit Poly' and a checkbox for 'Unwrap UVW'.

- **Task 7: Go into peel mode and start cutting the UV shell to create seams.**

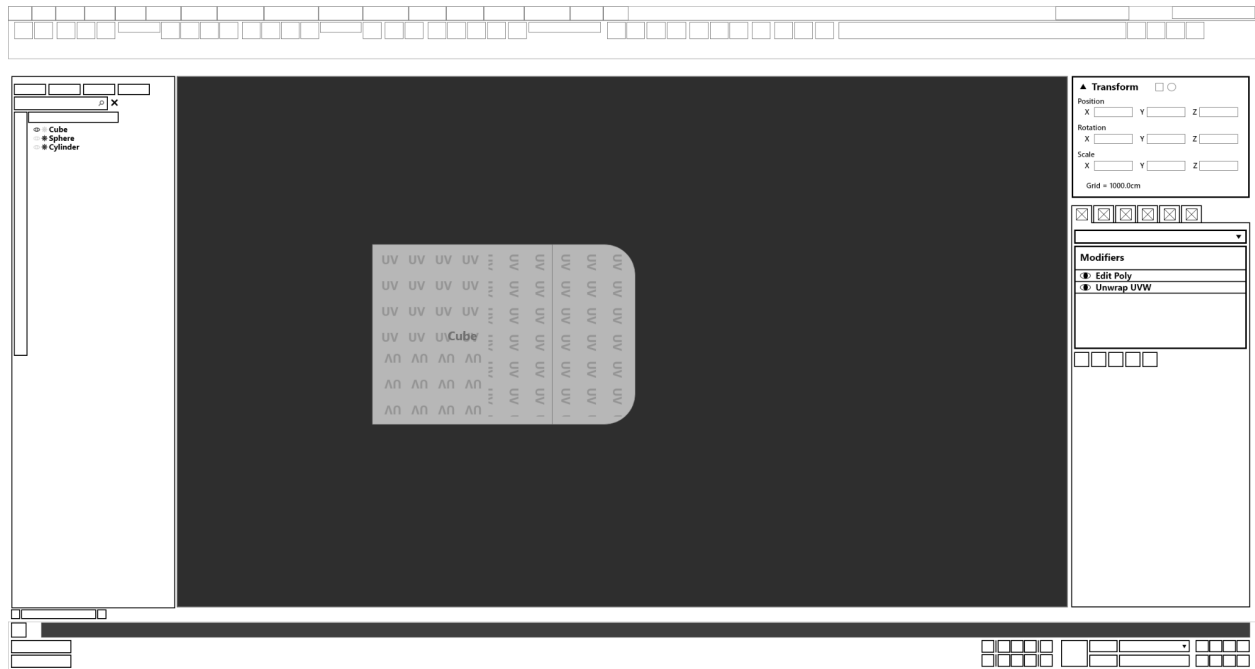
## 1. Base Radial Menu of the modifier.



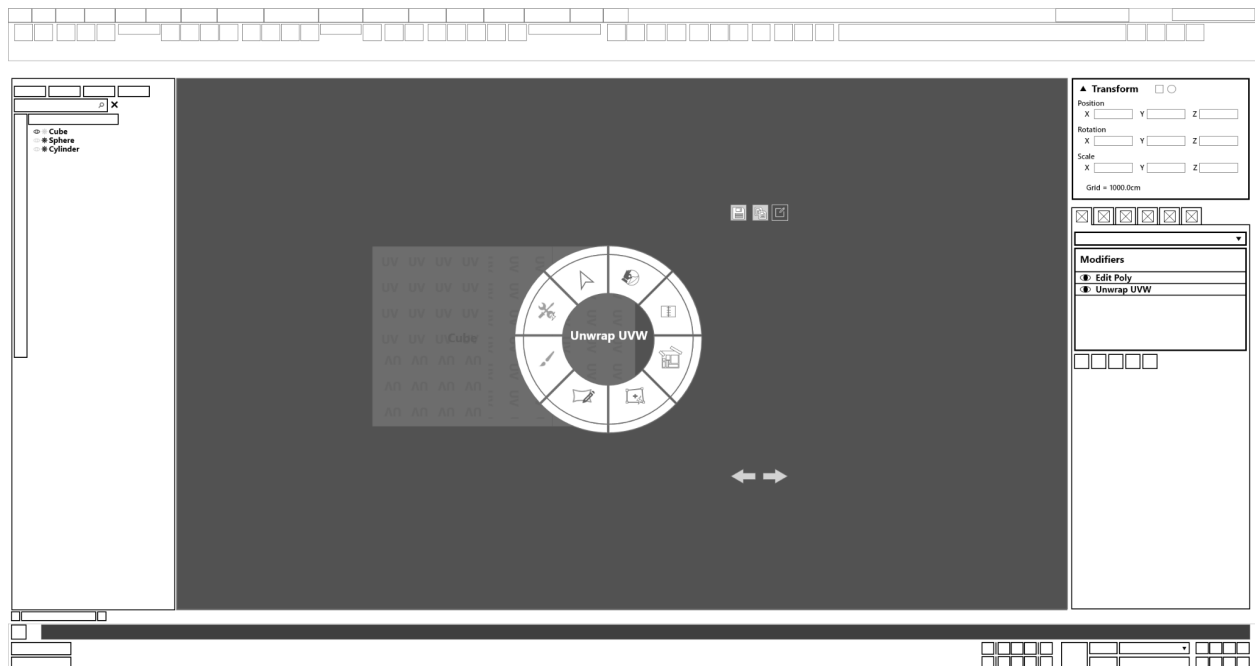
## 2. Sub-radial menu (Unwrap UVW)



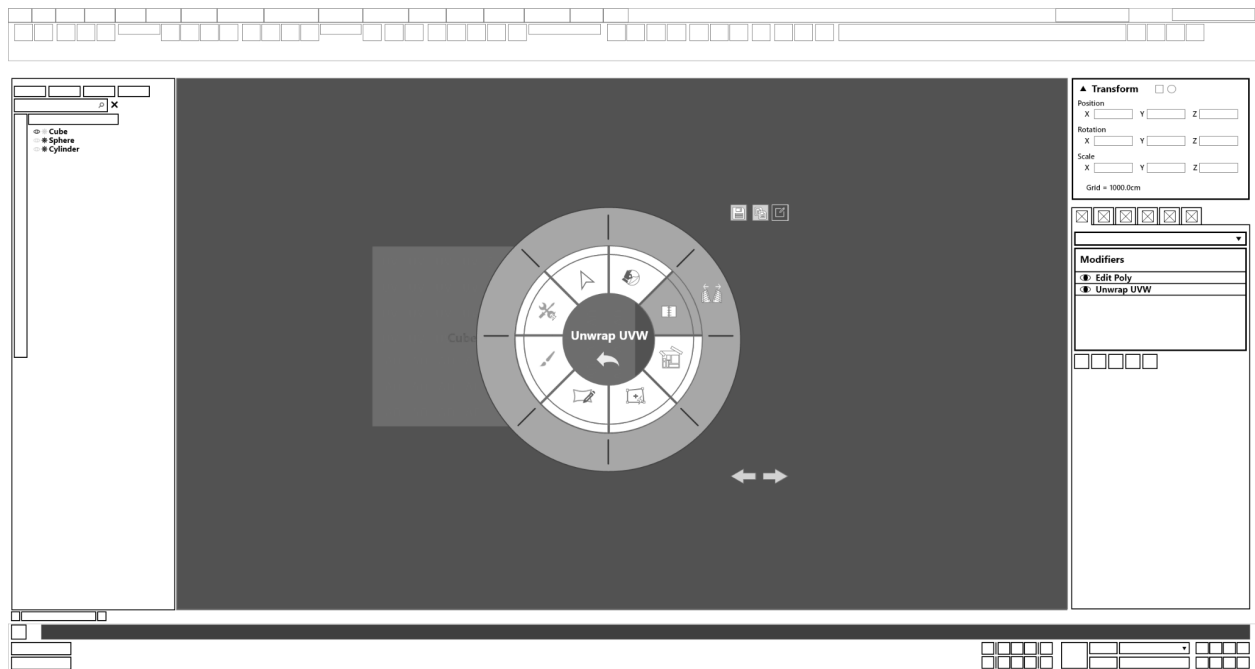
3. Cube UVs are updated based on the peel mode selected.



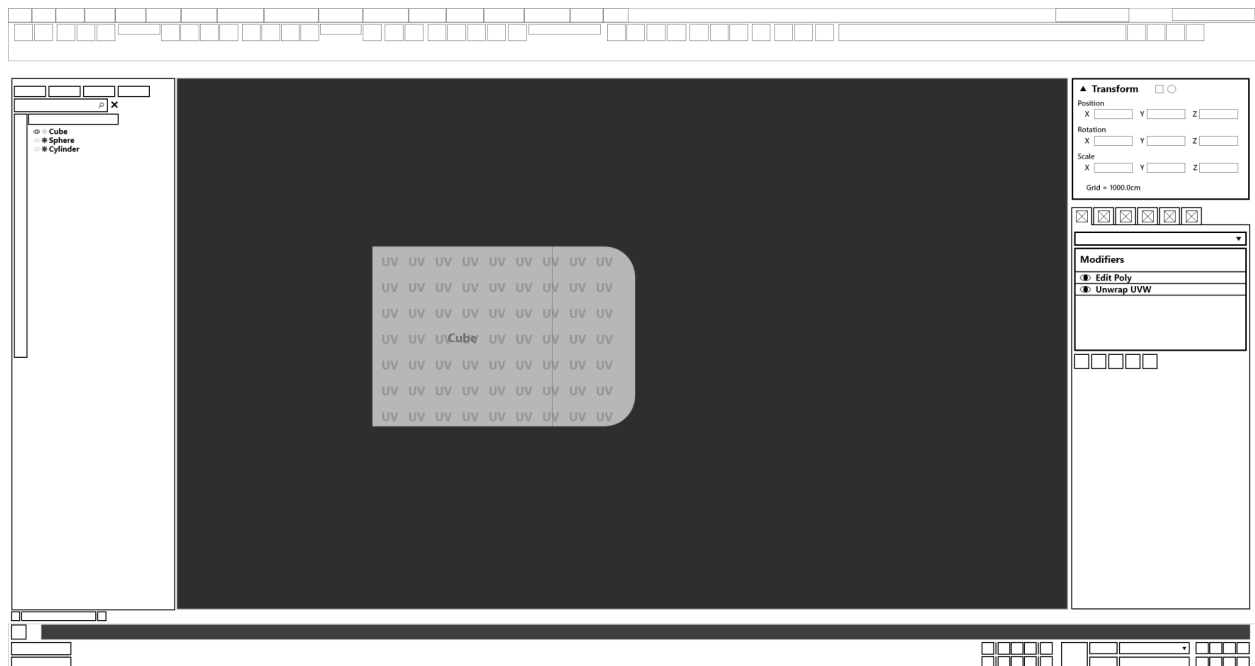
4. Base Radial Menu of the modifier.



## 5. Sub-radial menu (UV Stitching)

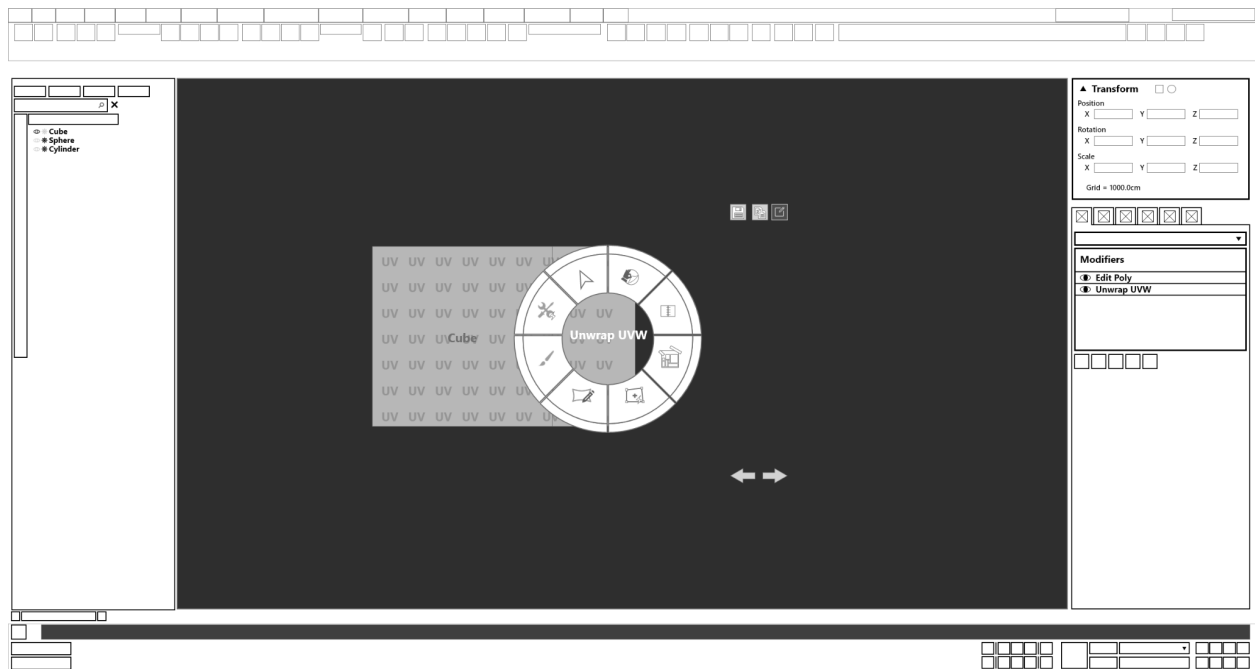


## 6. Cube UVs are updated based on the stitching.

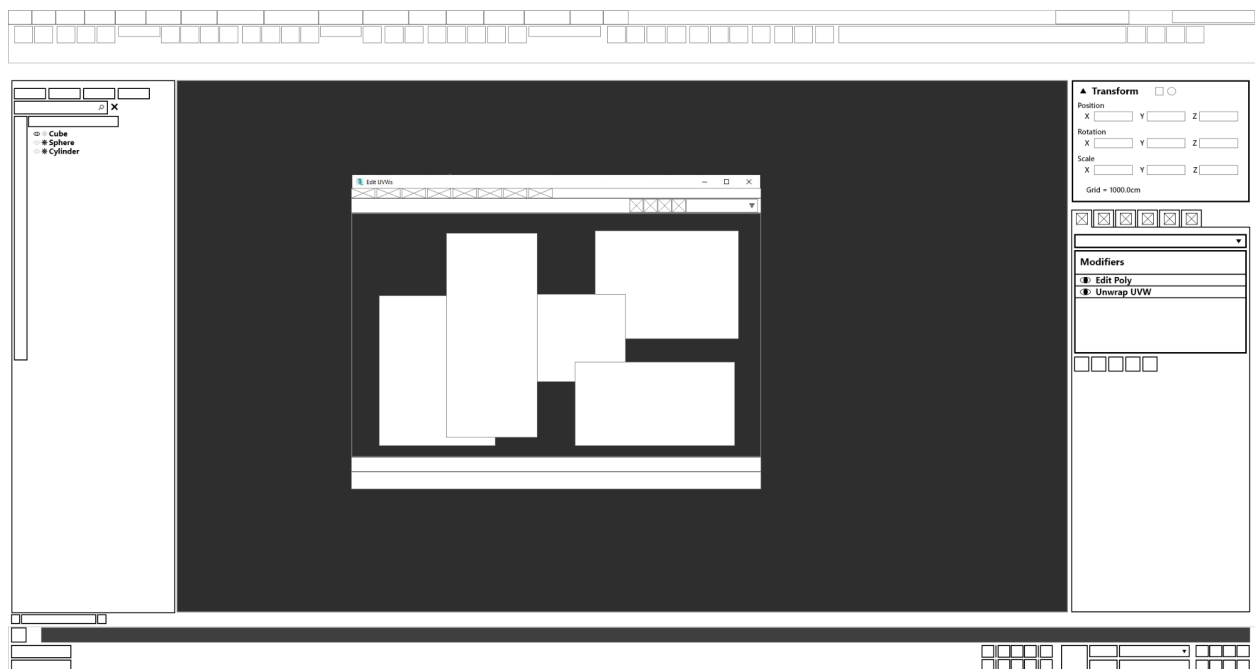


- **Task 8: Pack the UV Islands so that it is within the texture size.**

1. Base Radial Menu of the modifier.

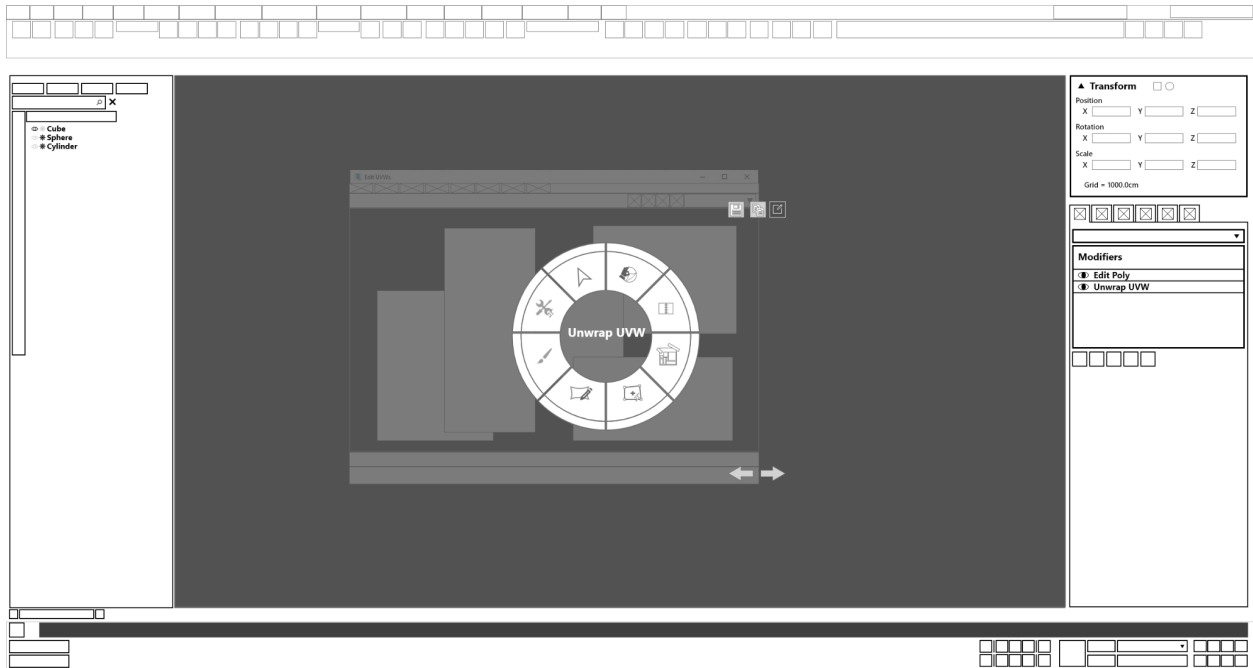


2. UVW Editor window

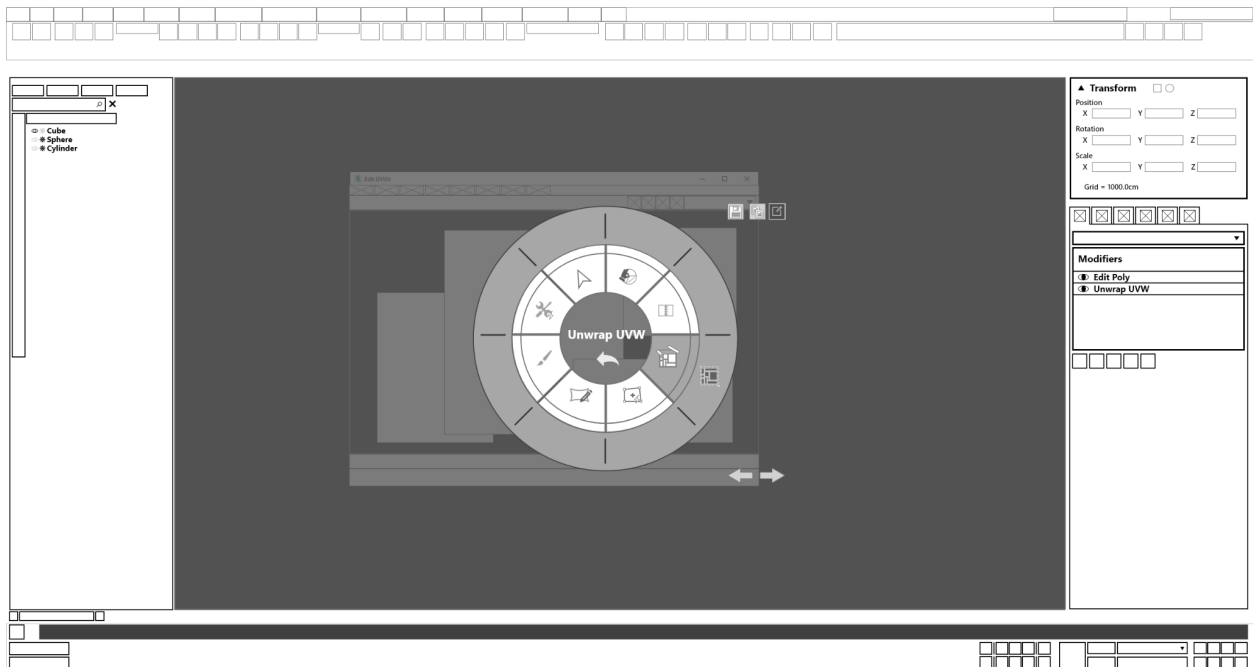




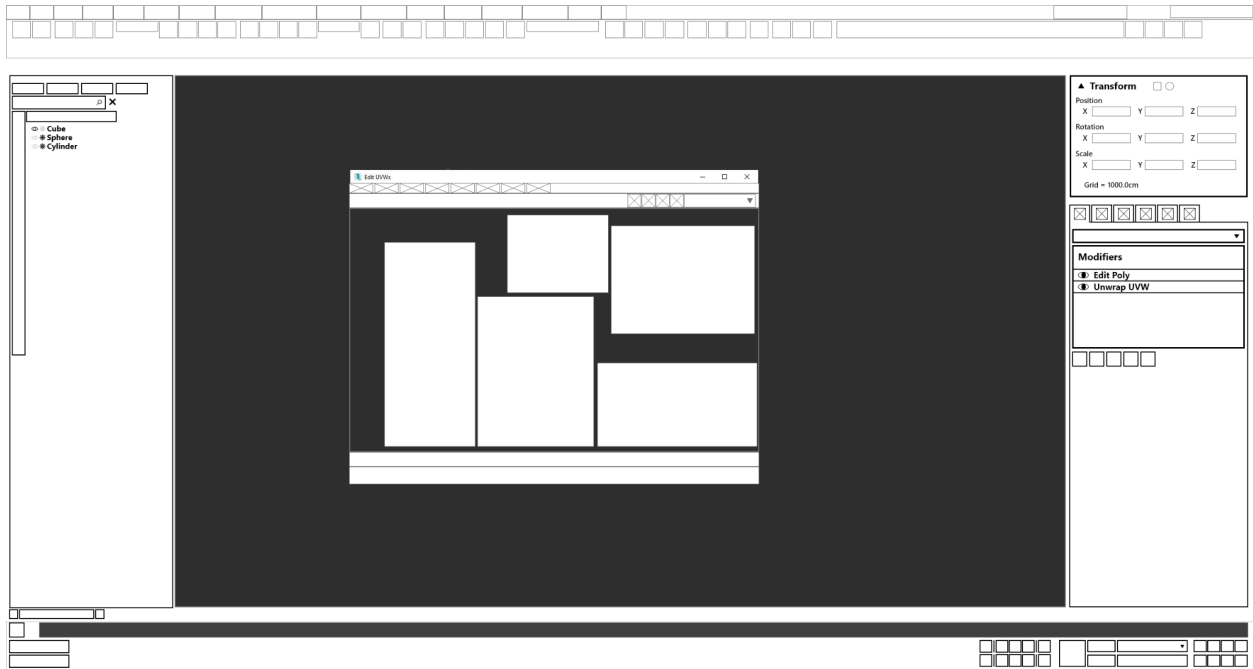
### 3. The similar Radial menu used on UVW Editor window



### 4. Sub-radial menu (UV Packing)

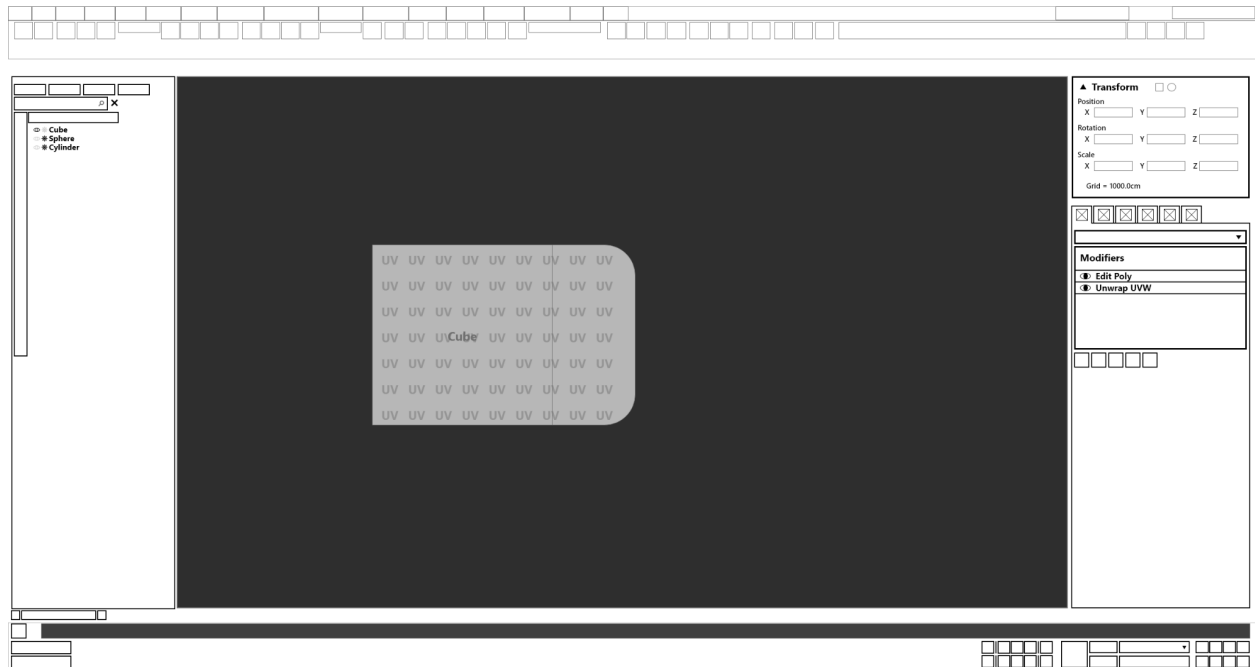


## 5. Updated UV packing

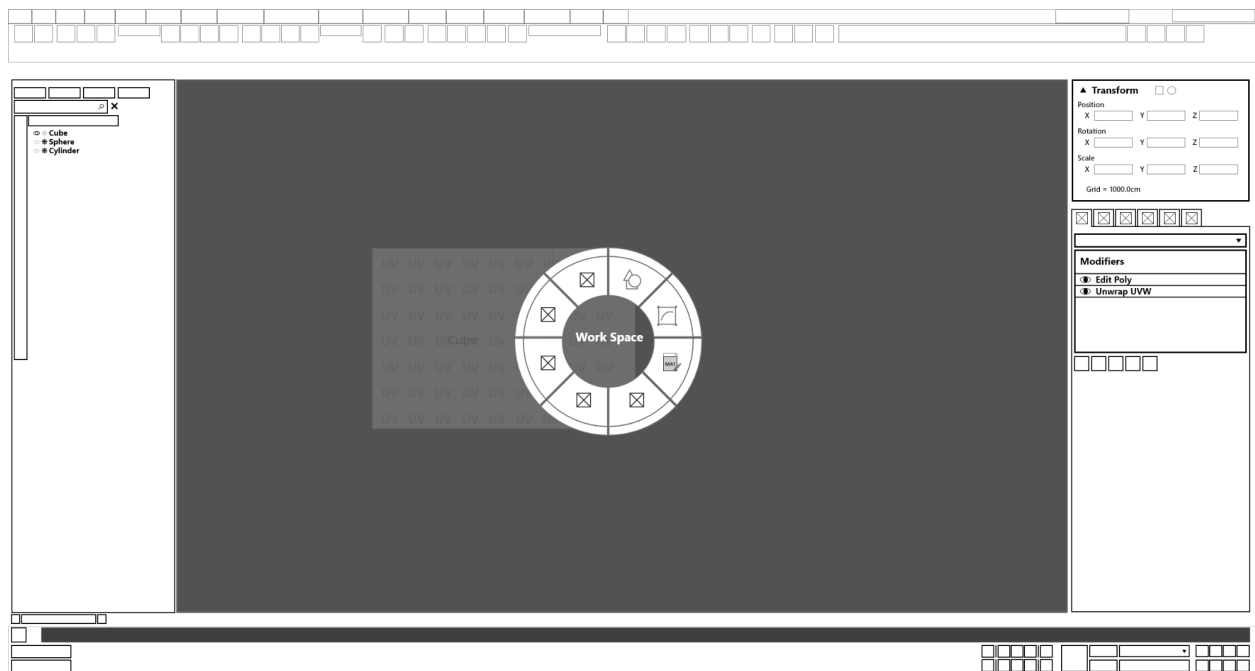


- **Task 9: Add a material into the material editor and assign it to the newly unwrapped cube.**

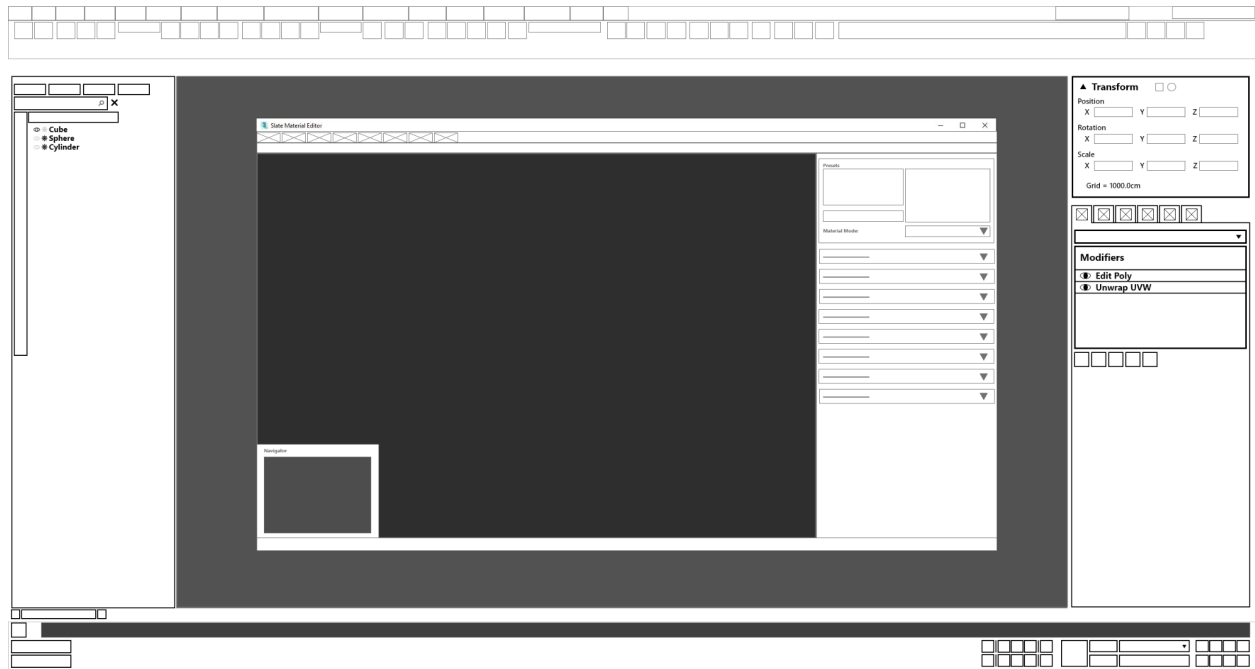
1. Base screen after closing UVW Editor.



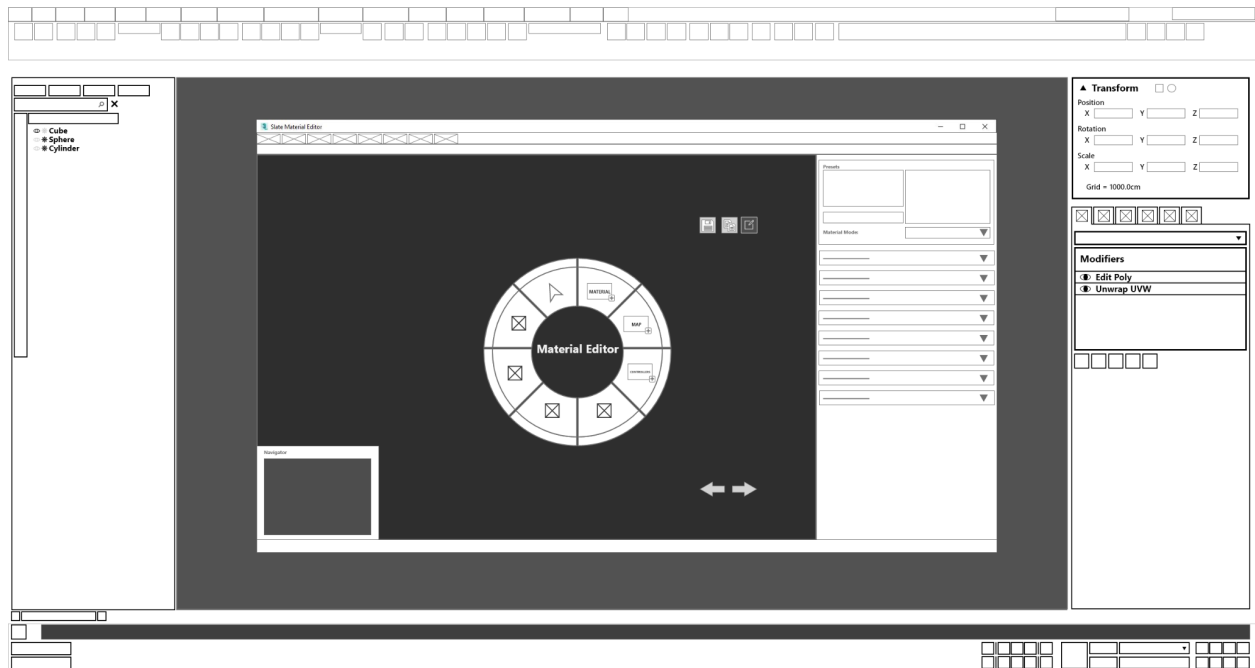
2. Base radial menu.



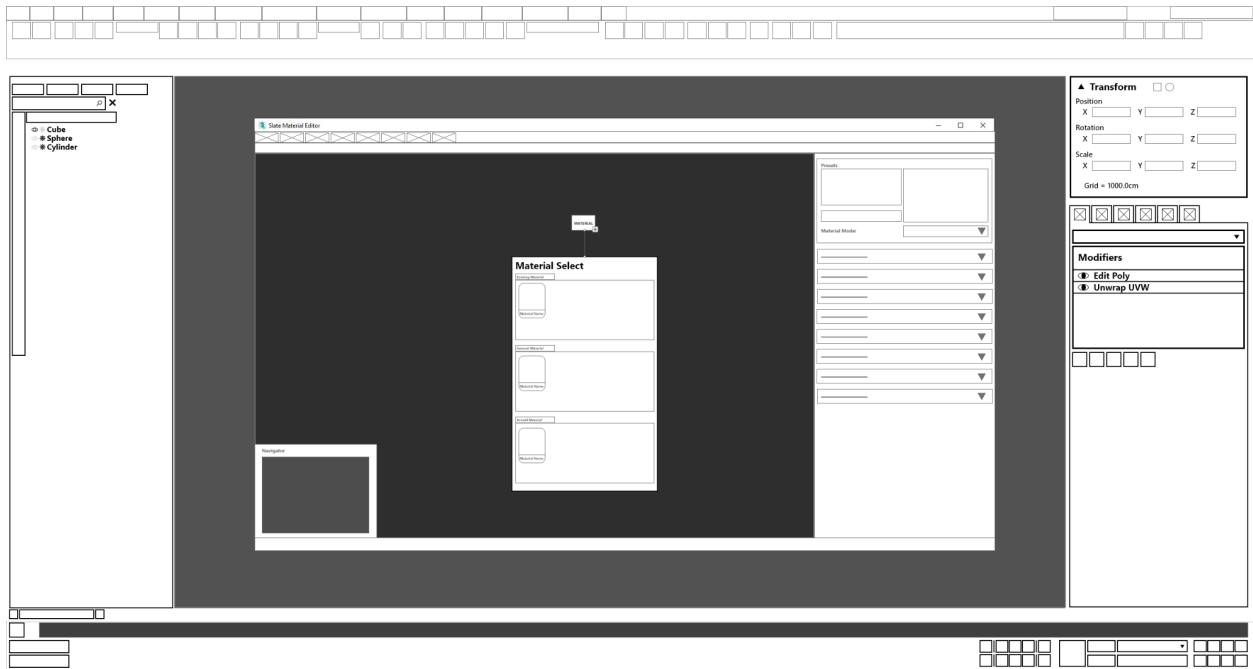
### 3. Material editor window.



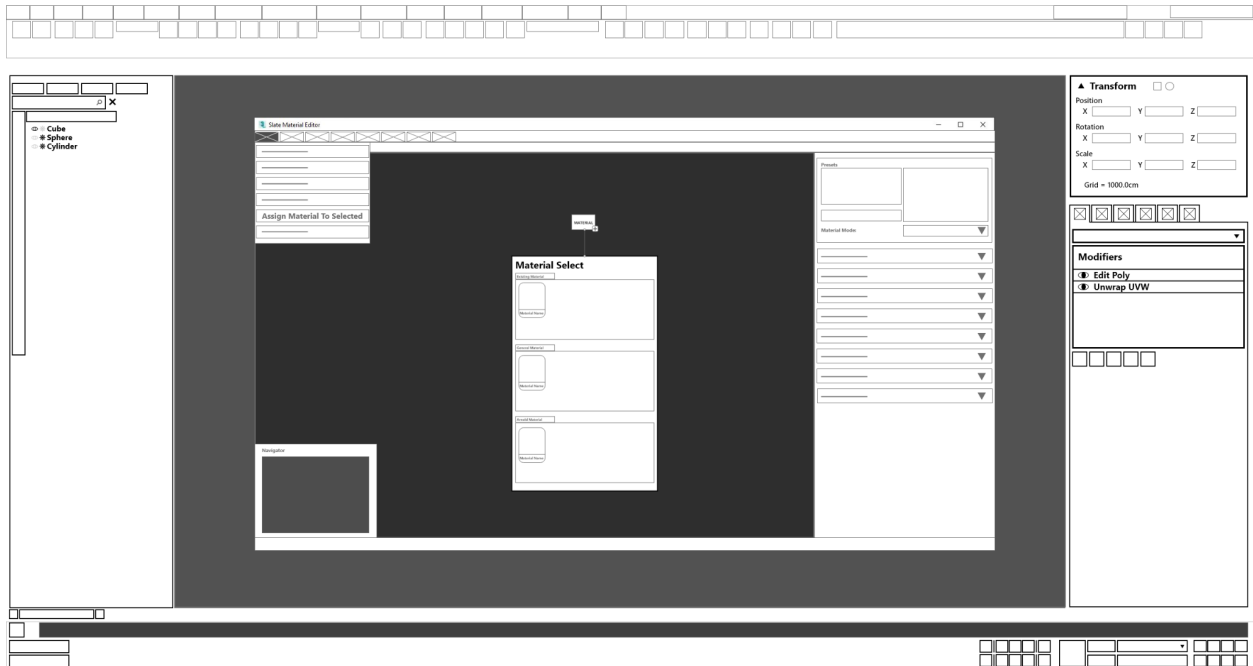
### 4. Base radial menu of the UVW Editor.



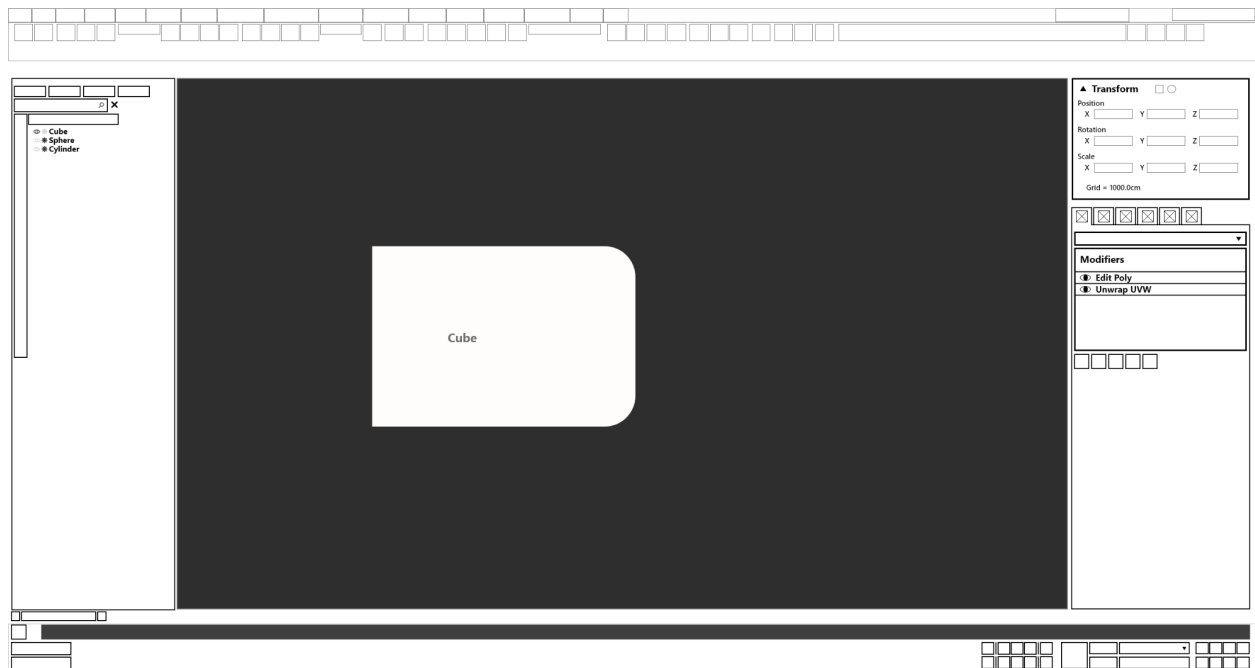
## 5. Creating a material



## 6. Opening sub-menu within the material editor window and assigning a material to select.

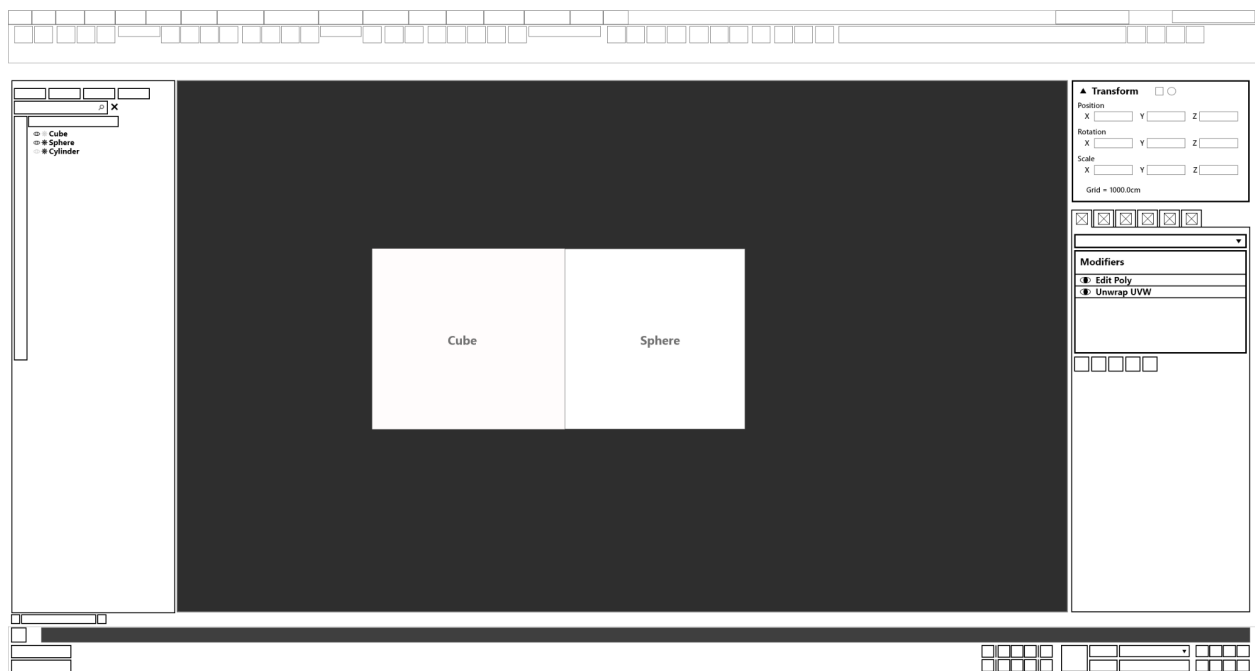


## 7. Base screen after closing UVW Editor.

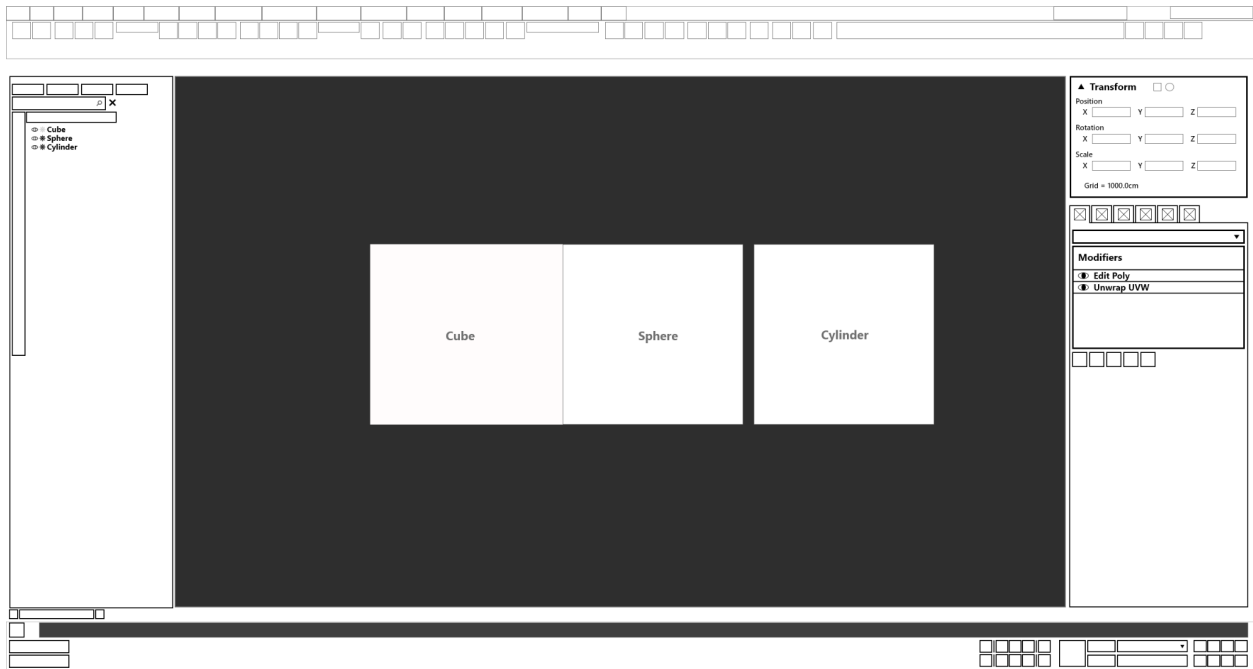


## • Task 10: Un-isolate the cube and export the entire model into an fbx format.

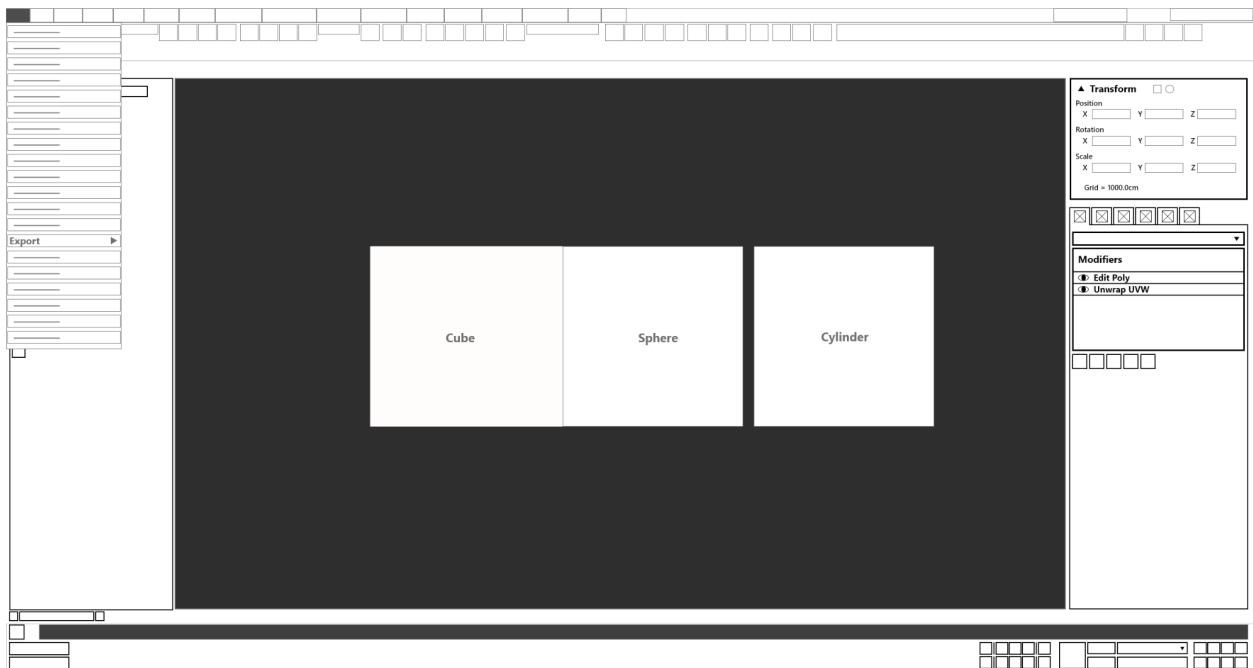
### 1. Unhiding the sphere.



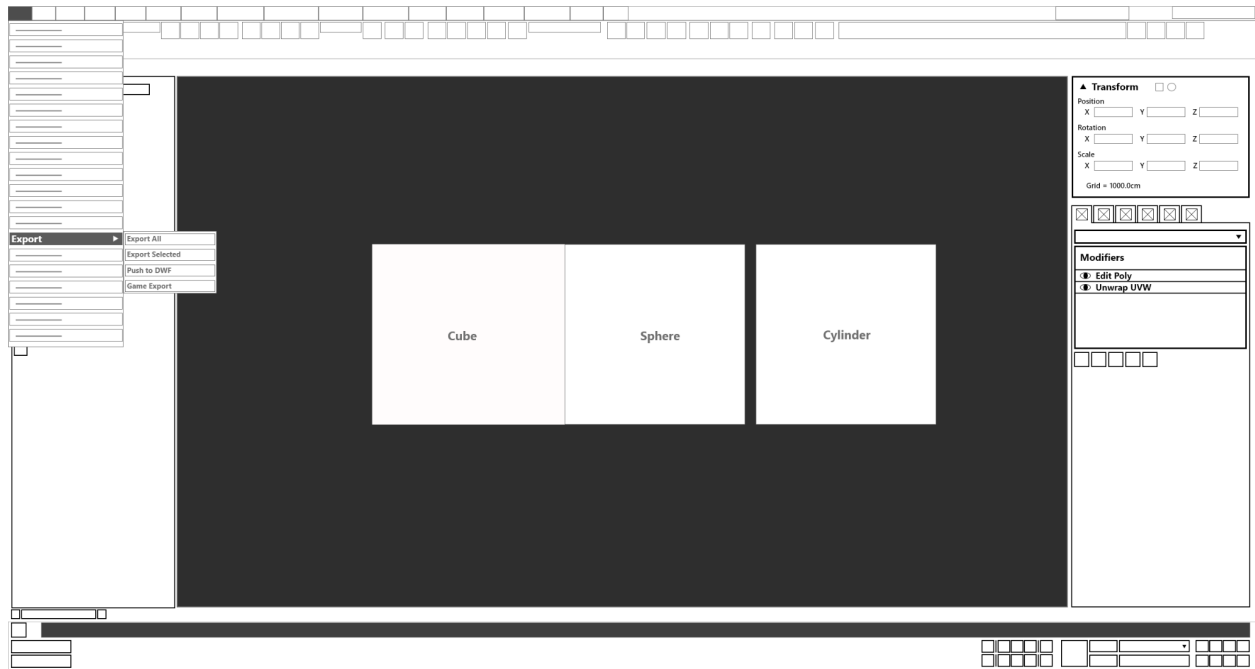
## 2. Unhiding the cylinder.



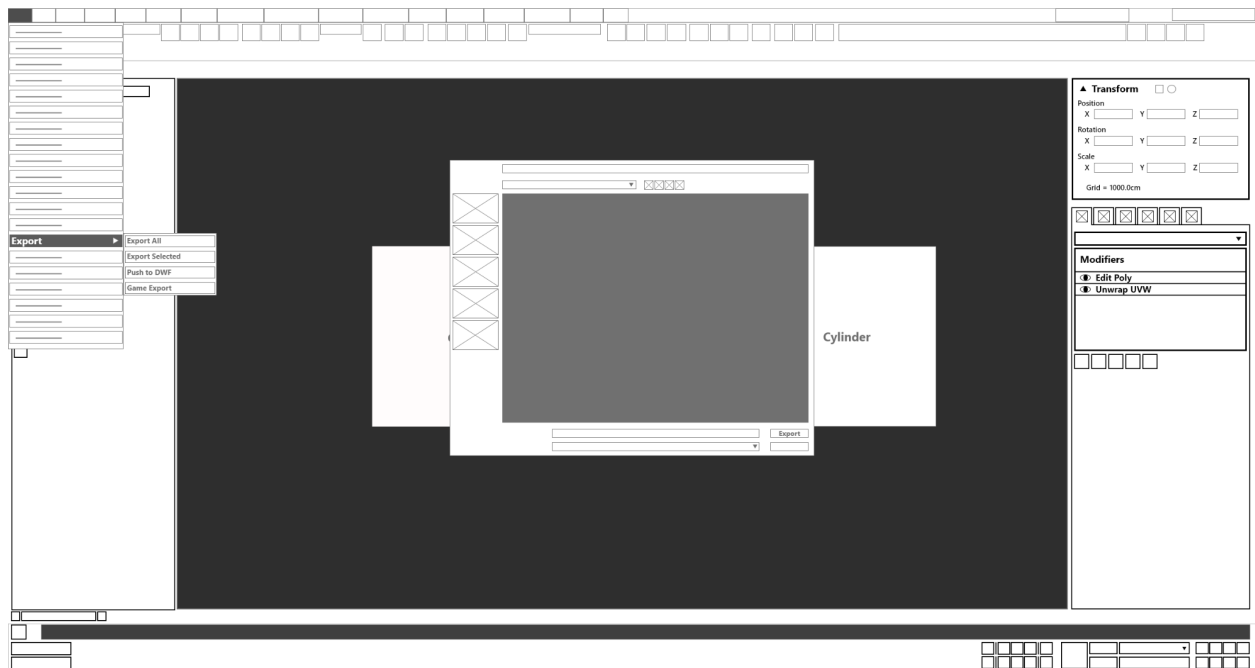
## 3. Opening the sub-menu of the root window to export the file.



#### 4. Exporting options available to the user.



#### 5. Export window for the user to export their files.





# Medium Fidelity

Refer to the external Adobe XD file for the interactive prototype.

# High Fidelity

Refer to the external Adobe XD file for the interactive prototype.

# Playtest Tasklist

<b>Task 1</b>	Create a cube, a sphere and a cylinder.
<b>Task 2</b>	Freeze the sphere and cylinder.
<b>Task 3</b>	Isolate the cube and set the cube to have 3 lengths, width, and height segments.
<b>Task 4</b>	Add an “Edit Poly” modifier to the cube using the radial menu.
<b>Task 5</b>	Extrude any face and chamfer any edge on the cube.
<b>Task 6</b>	Add an “Unwrap UVW” modifier.
<b>Task 7</b>	Go into peel mode and stitch the UVs to optimize UV shells.
<b>Task 8</b>	Open the UV Editor and pack the UV Islands so that it is within the texture size.
<b>Task 9</b>	Add a material into the material editor and assign it to the newly unwrapped cube.
<b>Task 10</b>	Un-isolate the cube and export the entire model into an fbx format.

## Recruited User Information

<b>Number of Testers Recruited</b>	18
<b>Age Range</b>	21 - 27
<b>Average Age</b>	23
<b>Professional Software Users</b>	12
<b>Software users with a family to take care of</b>	6

Reasons for choosing recruited users:

1. Falls within primary and secondary persona attributes.
2. Both experienced and inexperienced to 3ds Max, able to collect a wide range of results.
3. Availability.

	Low Fidelity Analysis
<b>Task 1</b>	<ul style="list-style-type: none"> <li>• Playtesters completed the task with little to no issues navigating the work environment.</li> <li>• This was also the moment when each playtester discovered the Radial Menu and subsequently relied on it for subsequent tasks.</li> </ul>
<b>Task 2</b>	<ul style="list-style-type: none"> <li>• Aside from being initially confused with the shortcut keys, partially due to the nature of the low fidelity, playtesters eventually managed to find the appropriate tool needed to complete this task.</li> </ul>
<b>Task 3</b>	<ul style="list-style-type: none"> <li>• Playtesters were split, some deciding to use the available isolate button, while others relied on using keyboard shortcuts to complete the task.</li> <li>• Some playtesters also took some time in locating the isolate button.</li> </ul>
<b>Task 4</b>	<ul style="list-style-type: none"> <li>• Playtesters completed this task with relatively no issue.</li> <li>• At this point, most playtesters were already using intuition to find the “Edit Poly” Modifier in the Radial Menu.</li> </ul>
<b>Task 5</b>	<ul style="list-style-type: none"> <li>• Playtesters completed this task with relatively no issue and took the same steps in accomplishing it.</li> </ul>
<b>Task 6</b>	<ul style="list-style-type: none"> <li>• Each Playtester used different steps in finding the “Unwrap UVW” modifier. Some preferred to search for it under the modifier pop-up list, while others used the Radial Menu.</li> <li>• It should be noted that despite the different steps, each Playtester easily found what they were looking for with their respective workflow.</li> </ul>
<b>Task 7</b>	<ul style="list-style-type: none"> <li>• As experienced 3D modellers, the playtesters had relatively no issue completing the task with the same workflow; by using the Radial Menu.</li> </ul>
<b>Task 8</b>	<ul style="list-style-type: none"> <li>• At this point, most playtesters were already using intuition to find the “Edit Poly” Modifier in the Radial Menu.</li> </ul>
<b>Task 9</b>	<ul style="list-style-type: none"> <li>• This task had some discrepancies regarding the low fidelity, in the sense that some playtesters did not know what icons they were clicking on.</li> </ul>
<b>Task 10</b>	<ul style="list-style-type: none"> <li>• Playtesters completed this task with relative ease.</li> </ul>

	Medium Fidelity Analysis
<b>Task 1</b>	<ul style="list-style-type: none"> <li>Some playtesters performed this task the traditional way of using the command panel.</li> <li>It is worth pointing out that this group of playtesters have prior experience in using 3ds Max in the past, or are still using it today. These were the users that did not rely on the Radial Menu during this task.</li> </ul>
<b>Task 2</b>	<ul style="list-style-type: none"> <li>Playtesters completed the task with relative ease.</li> <li>One Playtester failed to select the element they wanted to “isolate” beforehand but immediately rectified his mistake once it had been pointed out without issue.</li> </ul>
<b>Task 3</b>	<ul style="list-style-type: none"> <li>Again, there was a mix of how the playtesters went about completing this task. However, playtesters managed to complete this task with relative ease using their method.</li> </ul>
<b>Task 4</b>	<ul style="list-style-type: none"> <li>Playtesters completed this task with little to no problem.</li> <li>At this point of the playtest, all of the playtesters “discovered” the Radial Menu, and after a few seconds of tinkering, could understand its use.</li> </ul>
<b>Task 5</b>	<ul style="list-style-type: none"> <li>Playtesters completed the task with the use of the tools found in the Radial Menu.</li> <li>Most of these playtesters quickly adapted to the Radial Menu workflow and were able to navigate through the tools fluidly.</li> </ul>
<b>Task 6</b>	<ul style="list-style-type: none"> <li>At this point, it seems that with some tinkering and exposure to the Radial Menu, playtesters were now fully adapted into the system. They would comment that it was “intuitive” and compare it to the one found in Maya.</li> </ul>
<b>Task 7</b>	<ul style="list-style-type: none"> <li>Playtesters had relatively no issues completing this task, aside from some 3D modelling based issues.</li> </ul>
<b>Task 8</b>	<ul style="list-style-type: none"> <li>Playtesters had relatively no issues completing this task.</li> </ul>
<b>Task 9</b>	<ul style="list-style-type: none"> <li>Playtesters had relatively no issues completing this task.</li> </ul>
<b>Task 10</b>	<ul style="list-style-type: none"> <li>Playtesters had relatively no issues completing this task.</li> </ul>

	<ul style="list-style-type: none"> <li>It is worth pointing out that by this point, Playtesters were comfortable enough with the Radial Menu that they scanned through the entire Radial Menu before realising they did not need it.</li> </ul>
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	High Fidelity Analysis
<b>Task 1</b>	<ul style="list-style-type: none"> <li>Playtesters had no problem with the controls. It was straightforward and the task was completed quickly.</li> <li>Some used the command panel while others used the shortcut radial menu.</li> </ul>
<b>Task 2</b>	<ul style="list-style-type: none"> <li>Playtesters took a short time to locate where the freeze button was.</li> <li>Preferences of the playtesters tend to lean towards clicking the freeze icon in the object list rather than the shortcut radial menu.</li> </ul>
<b>Task 3</b>	<ul style="list-style-type: none"> <li>For playtesters who were new to 3D software, the isolate button was a little tough to find.</li> <li>For playtesters who are used to 3D software, it took a much shorter time to find the isolate button.</li> </ul>
<b>Task 4</b>	<ul style="list-style-type: none"> <li>Initially, some playtesters were confused about the differences between “Edit Geometry” and “Selection”, however after some time, they understood each function better.</li> <li>Some playtesters were able to smoothly input the desired values in the box to adjust the chamfer strength while most just dragged the mouse and chamfered the edge.</li> </ul>
<b>Task 5</b>	<ul style="list-style-type: none"> <li>All playtesters were able to find the “Edit Poly” modifier in the radial menu</li> </ul>
<b>Task 6</b>	<ul style="list-style-type: none"> <li>Most playtesters were able to complete this by searching either under the list of modifiers pop-ups or the search bar.</li> </ul>
<b>Task 7</b>	<ul style="list-style-type: none"> <li>Most playtesters approached this task with the workflow of creating seams based on 3D game models.</li> <li>A minority of the playtesters assumed that the “Peel mode” allowed them to stitch borders but quickly noticed it was only meant to stitch edges.</li> </ul>

<b>Task 8</b>	<ul style="list-style-type: none"> <li>• Playtesters prefer to open the UV editor and UV unwrap using the radial menu.</li> <li>• UV faces were thought by a minority of playtesters to resemble Adobe Photoshop layers and tried to select on each UV face.</li> <li>• Most playtesters found the “Pack” under the “Tools” sub-menu to be useful when packing UV islands to their preferences while others manually moved the faces around and resized them to fit them in the texture size.</li> </ul>
<b>Task 9</b>	<ul style="list-style-type: none"> <li>• Playtesters accessed the Material Editor via “Rendering” under the radial menu to open the Material Editor first before applying the material to the model.</li> </ul>
<b>Task 10</b>	<ul style="list-style-type: none"> <li>• All playtesters were able to smoothly complete this task of exporting the model to FBX format.</li> <li>• They were able to remember how to turn off isolation mode.</li> </ul>

# Final Proposal

## Flowchart

Refer to external file (DES370\_Final\_Flowchart)

## Wireframes

Refer to Adobe XD File (DES370\_A2\_Low, DES370\_A2\_Medium, DES370\_A2\_High)

-----**SCROLL DOWN FOR FINAL SUMMARY**-----



# Final Summary

## Initial findings

First released in 1996, it is easy to understand why the 3ds Max is what it is today. With cluttered UI workspaces and unlabelled icons, further making a user's experience difficult, 3ds Max seems to be solely designed for those that have tirelessly spent the time to learn and master the thick manual handbooks that came along with their copy of the software.

Even with its modern updates and multiple UI overhauls throughout the years, 3ds Max is still very clearly designed for those who have already learnt its tools and are used to the workflows it provides. While this makes the 3D program tools seamless for those users, further complications arise when attempting to integrate this with newer users, who are unfamiliar with the program.

With this pre-UI/UX design navigation system, it presents itself as inaccessible to these new users, as it adds a challenge of navigating through untidy work environments to get things done.

## Final proposed changes

Thus, to foster this cohesion between old and new users, we took a different approach in redesigning and improving 3ds Max, keeping the pre-existing workflows of veteran users in mind, while also making things accessible for the newer ones.

This led to the brainstorming of a Radial Menu - inspired by other, more modern 3D computer graphic software like Maya - to not only make workflows more efficient but also provide a level of customizability to include any type of user.

Furthermore, this new menu design grants a consideration for adding names and/or labels to buttons as a method of "teaching" newcomers what each icon means. In addition to that, further considerations were given to include Tooltips, in the form of contextual dialogue boxes, that would appear when a user hovers their mouse over the icon.

## High-level problems and solutions

Problems faced by users	Proposed Solution
Awkward and disjointed workspaces that cluttered the screen.	It would be advised to categorise each selection of tools and store them in a radial menu that the user could open at any time during their workflow.
Unnamed and unlabelled buttons confuse when trying to do something.	Adding the names and/or description of each button with a contextual UI that would appear when the user is hovering their mouse over it would alleviate some confusion.
Scene explorer elements are not properly aligned and lack distinctive traits between the group and layer features. This may cause users to perform a wrong action.	Realign and redesign layout based on Gestalt's Law of Continuation, Similarity, Symmetry and Proximity. This will help the user mentally organise categories of tools better, resulting in an easier time of navigating workspaces.
The act of customising viewport windows is not intuitive. Users may become lost after making a mistake when controlling the viewports.	Easily-accessible viewport menus help in navigating the customizability of viewport workspaces easier.
Isolation button elements are packed too closely with other elements and are easy to miss. This is further emphasised by its small size.	Separated the transform and isolation button, giving the two elements further distinction between their emphasis.

-----SCROLL DOWN FOR OUR POST-MORTEM-----

# Post-Mortem

## What went well?

In short, due to the time when 3ds Max was first developed, the software was naturally riddled with problems for our team to fix.

As new users ourselves who were thrust into using the software, and forced to master it in a semester, for a computer graphics module, we experienced first-hand how inaccessible the software was. We already knew about the problems that we wanted to fix, but the problem was how we were going to go about doing this.

However, upon researching online for 3ds Max tutorial videos and even our old lecture recording, it seemed as though these more experienced users made use of 3ds Max's cluttered UI space by creating and developing their workflows.

Understanding this early on was vital in creating a goal for what the team then set out to fix.

## What went wrong?

Unlike other software that we could have chosen, 3ds Max was a challenge to redesign. At some points, it felt as though we were changing too much while other times it felt as though we were not adding enough. With an already cluttered work environment, it seemed as though adding to the software's UI was out of the question and it fell on us to pinpoint which particular feature we could and needed to focus on.

In conclusion, 3ds Max was undoubtedly a challenge for the team to research on and redesign given the amount of time this assignment was due and how massive the software's work environment of tools and functions are.

## What went wrong that was out of our control?

Covid.

To elaborate on that note, due to the nature of the pandemic, any forms of testing and group work had to be done online. This is not necessarily a bad thing, but it also means that we are limited to digital software. From a playtest standpoint, it means that we can only gather limited data in terms of how the user reacts to the playtest via their webcam and microphone, losing any body language nuances that might have been picked up otherwise. Quick iterations during testing also became a hassle, where we had to run through a test fully, make edits after and then retest it again instead of fixing a minor thing quickly on the spot. All this wrapped up in a bad wifi connection means terrible experience and minimal data gathered leading to loss of precious time. Again, to sum it up nicely, Covid.