

TSA Manufacturing Prototype Portfolio

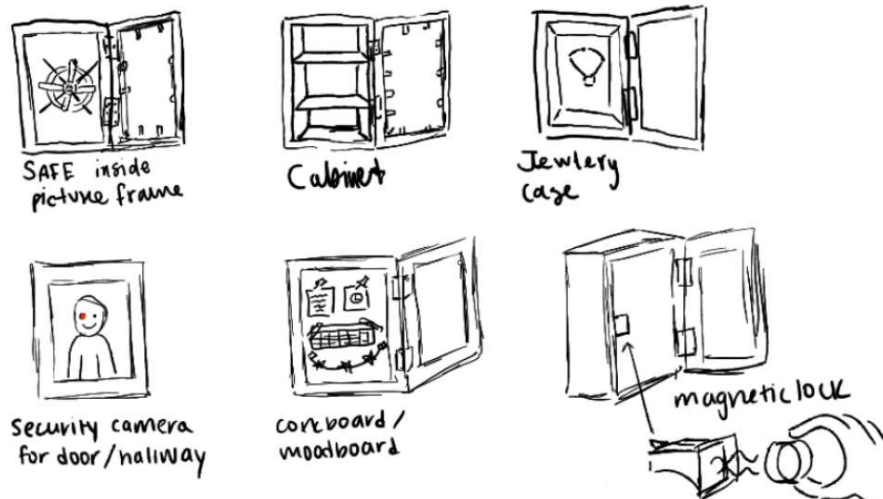
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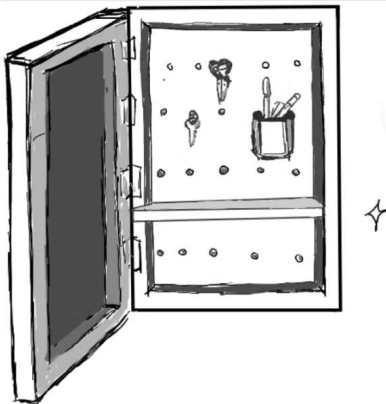
Brainstorming

For brainstorming, we came up with many ideas. For example, our first design was to have a safe hidden behind a picture frame. However, this did not seem like a good choice as it was difficult to improve on the idea. The cabinet design was also something that seemed really interesting to create which is why in the end we decided to improve it. The jewellery case design seemed like a good idea in order to create a sleek picture frame, but again, the idea seemed to not be something we could innovate. The designs that had security incorporated in them would have needed external technology and softwares added to it. The corkboard and moodboard were a good idea, but there seemed to be no reason to hide it. Although it would have been a great source of organization, it didn't seem necessary. The magnetic lock was a feature we thought would benefit our final design. Our final design was a customizable storage unit inside of a picture frame. Not only is this a really innovative way to store items, it also makes sure to not take up much space. It can either be mounted on a wall or stand by itself without its size making it seem out of place..

Brainstorming sketches



Final Design:



Initial Research

Keeping in mind that the picture frame would be primarily kept in office or working spaces, we wanted to incorporate a seamless design that blends in with the surrounding space and wall, while providing versatility in the interior cabinet. The most similar item we could think of to this was a medicine cabinet. Thus, we analyzed the **ENHET mirror cabinet from IKEA**.



Pros

- **Simple manufacturing design, common in most IKEA products**
- Shelves inside were customizable in level

Cons

- Heavy design, too heavy weight for a picture frame
- Interior is not customizable
- Extrudes out more than a picture frame would

Our primary concern was the limited customization on the interior, and the depth of the frame. To combat the first issue, we wondered if a peg board system on the inside would fix this problem. Thus, we analyzed the **SKÅDIS Pegboard** also from **IKEA** to gauge how we could customize the interior.

Pros

- **Allows a variety of storage accessories to suit all types of objects** (e.g. the hooks, hanging containers, tool clips)
- Provides flexibility to the owner to fit the peg board for their needs

Cons

- Not used in small spaces
- Mostly used in hardware tools
- Also requires larger depth to hold things like containers



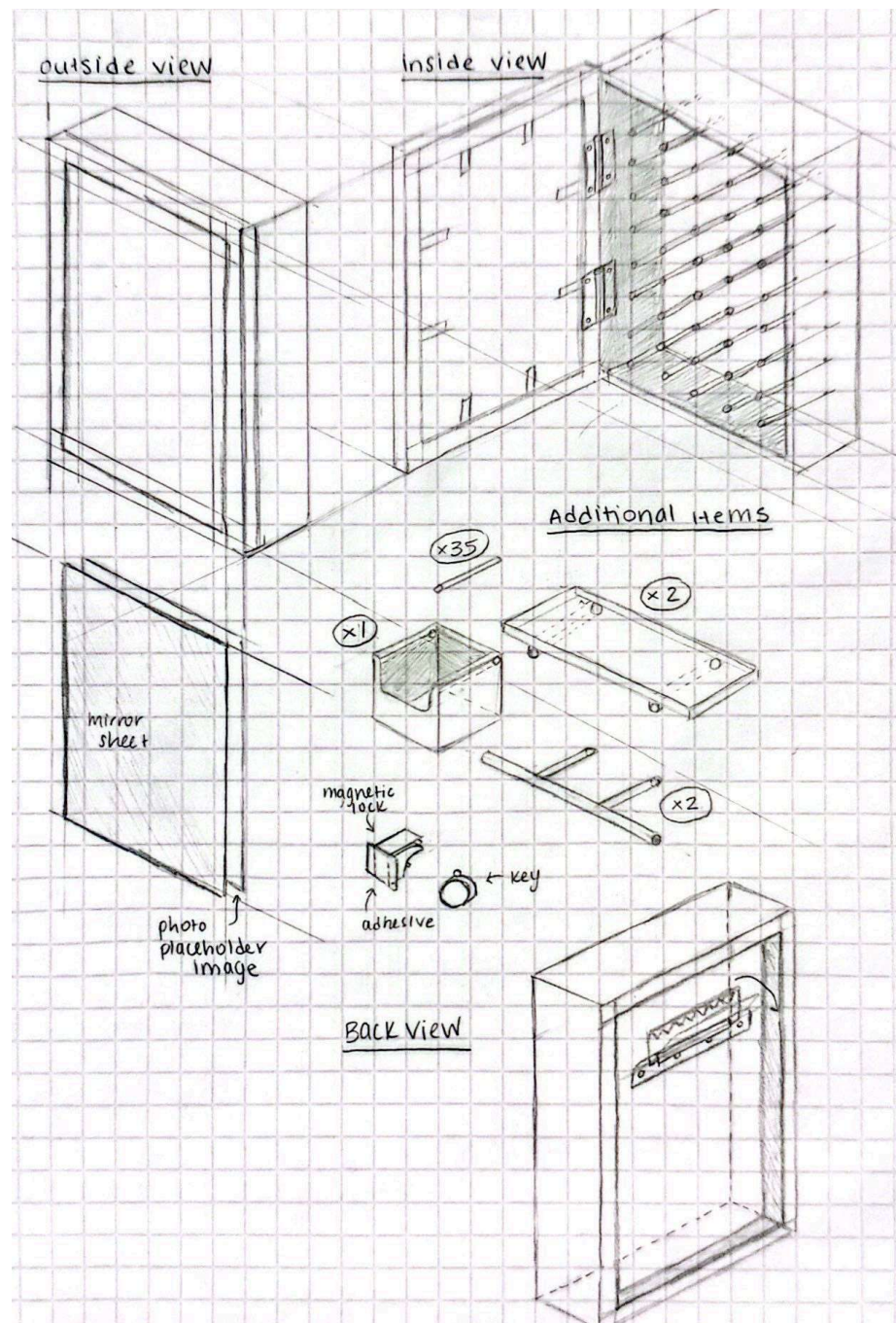
Assembly Drawing

Shown here is the isometric drawing with all the components assembled.

Each grid can be represented as ~1 inch

Notes

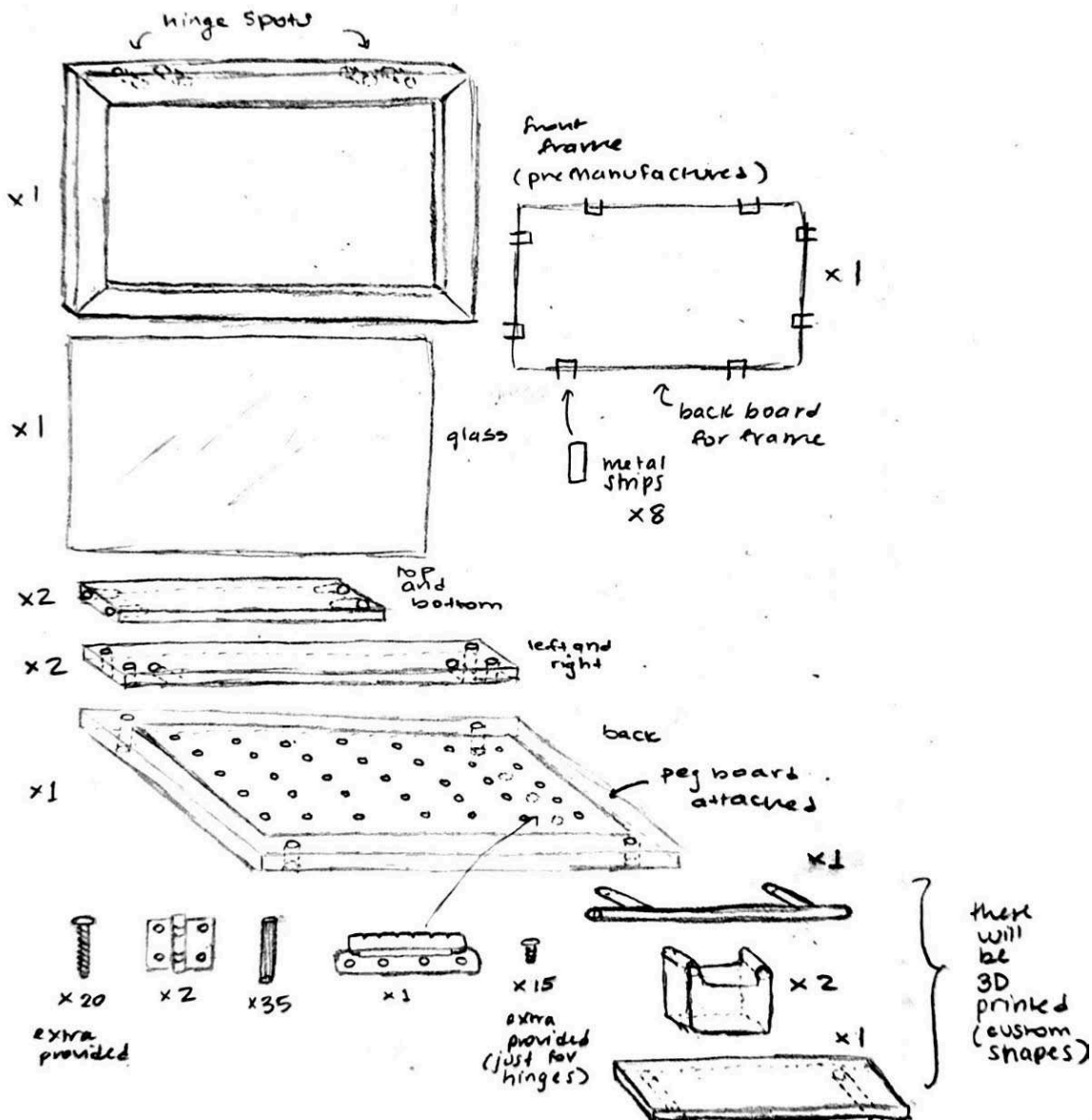
- The additional items are not on the display, but can be placed by sliding through the dowells on the board.
- The photo or mirror sheet can be placed by removing the back board seen through the inside view and will be positioned and locked by the side tabs.



Manufactured Parts

Materials

The frame will be made out of plyboard fiberboard. The frame will have a glass sheet come along with it in order to enure the safety of the picture. The pegboard will be made out of plastic but will have holes going through it completely for extra stability.



References

IKEA. (n.d.). ENHET mirror cabinet with 1 door, white. Retrieved January 23, 2025, from <https://www.ikea.com/us/en/p/enhet-mirror-cab-1-door-white-s89434575/>

IKEA. (n.d.). SKÅDIS pegboard, wood. Retrieved January 23, 2025, from <https://www.ikea.com/us/en/p/skadis-pegboard-wood-10347171/>