# Concept Screening Worksheet

| **Overview** | |
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| Need statement: | |
| There is a need to reduce the risk of contents in a controlled environment from being compromised due to unexpected, unwanted, or unintentional access in frequently accessed refrigerators. | |
| Description of concept: | Concept sketch: |
| The use of the weighted mechanism is so that the door can reliably shut when it is open (the weighted mechanism will use the weight on it to help close the refrigerator door). The use of a pin pad will ensure that the user can unlock and lock the door using a passcode as well as to shut off an alarm if it detects that the refrigerator is somehow open past a specified time usually if the weighted mechanism fails).  The components of this concept involve:  -weighted mechanism  -containing potentially a spring and a sensor  -pin pad lock  -sound/light alarms  If the refrigerator is opened without the pin pad being used to open the lock, a light/sound alarm will be triggered and it can only be stopped once a person closes the door. A person can access the refrigerator by typing the passcode on the pin pad lock. The weighted mechanism will sense that the door is not in the closed position if a person opens the refrigerator so the door can close on its own.. | PIN pad with speaker and alarm on the side  Closing mechanism on the top of the PIN pad that has a spring and pinion like automatic door closers |

| **Need Criteria** |
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| Must-Haves | Confidence in Ability to Satisfy |
| --- | --- |
| Ease of Use | □ High □ Medium □ Low |
| Ease of Manufacturing | □ High □ Medium □ Low |
| Practicality | □ High □ Medium □ Low |
| Ease of Handling | □ High □ Medium □ Low |
| Affordability | □ High □ Medium □ Low |
| Power Delivery | □ High □ Medium □ Low |
| Longevity | □ High □ Medium □ Low |
| Security | □ High □ Medium □ Low |

| **Greatest Concerns About Concept’s Ability to Satisfy Need Criteria** |
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| While this concept may fulfill many Must-Haves, it ultimately might cause problems in its section for ease of manufacturing. It may be easy to understand and use, but it will take more time to develop on the design end. |
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| **Technical Feasibility** | | | |
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| **Favorability** | **Disease Process/ Mechanism of Action** | **Key Concept Mechanism** | **Concept Feasibility** |
| ... success growth graph | Well Understood | Well Established Technology | Similar Devices in Related Fields |
| Mostly Understood | Demonstrated in Related Fields | Similar Devices in Disparate Fields |
| Partially Understood | Demonstrated in Disparate Fields | Novel Approach |
| Not Understood or Well Known | Technology Not Yet Available | Novel, Risky Approach |
| **Critical Questions to Answer to Demonstrate Technical Feasibility\*** | | | |
| How do we ensure that the pin pad can remember a specific code in order to open or close only when the specific code is activated?  How do we ensure that the weighted mechanism can actually close on its own?  How do we design a weighted door system that does not impede the ease of opening of the door? | | | |
| **Estimated Time and Resources Needed to Demonstrate Technical Feasibility\*** | | | |
| We will need to have an appropriate pin pad design, a designed weight mechanism, and a sound and light alarm system, which could take some time to design to combine all in an effective way, so it would take around four days to prototype and test this design. | | | |

\*Refer to your prototyping plan for the key take-aways to include in these sections

| **Intellectual Property** | | |
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| **Favorability** | **IP Landscape** | **Comments** |
| ... success growth graph | No existing prior art |  |
| Little existing prior art |  |
| Some existing prior art | There exists prior art for pinpads and weighted mechanisms, but it is hard to find a design that incorporates both. |
| Extremely crowded |  |
| **In specific terms, what does your concept do?** | | |
| The concept can be an effective lock system as well as having a way to close the refrigerator without human intervention in order to ensure the refrigerator can stay shut. The weighted mechanism ensures that the refrigerator can close on its own by having a weight system that naturally closes the refrigerator door when open past a specific length of time. The pin pad is there to ensure the refrigerator can only be opened when it is unlocked when a user types in a numeric passcode. Furthermore, the pin pads can be used for potential disarming of the alarm in the event that the closing mechanism fails. If the refrigerator is open for too long, the alarm will sound and the person will have to manually close the door and type in a code to stop the alarm. | | |
| **What aspects of your solution are useful (utility)?** | | |
| The aspects of the solution that are useful are that the weighted mechanisms automatically close due to its weight, so naturally the weighted mechanism will naturally go to its normal preferred state of being closed and close the door. Furthermore, the pin pad is a type of unlocking system to ensure that only the people who know the code can access the refrigerator and no one else can. The pin pad being on the design will also ensure a person is there to close the refrigerator if the alarm is triggered. | | |
| **What aspects of your solution are non-obvious?** | | |
| The weighted mechanism will change the status of the door on its own from open to closed so the user does not need to be notified if the door is open or not. | | |
| **What aspects of your solution are novel?** | | |
| While the idea of the weighted door is frequently used in regular doors, the solution of using weighted doors on refrigerators is not frequently used, especially since the goal of the device is to be easy to access and install. This solution is somewhat novel, yet commonly used in other aspects of life. | | |