



Ageing India

Foley designs, Bangalore

Research based project

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Jan 2019 - April 2019

AGING INDIA - Understanding the needs of the elderly

Brief

Understanding psychology

Field Research & Insights

Scope of Product Development



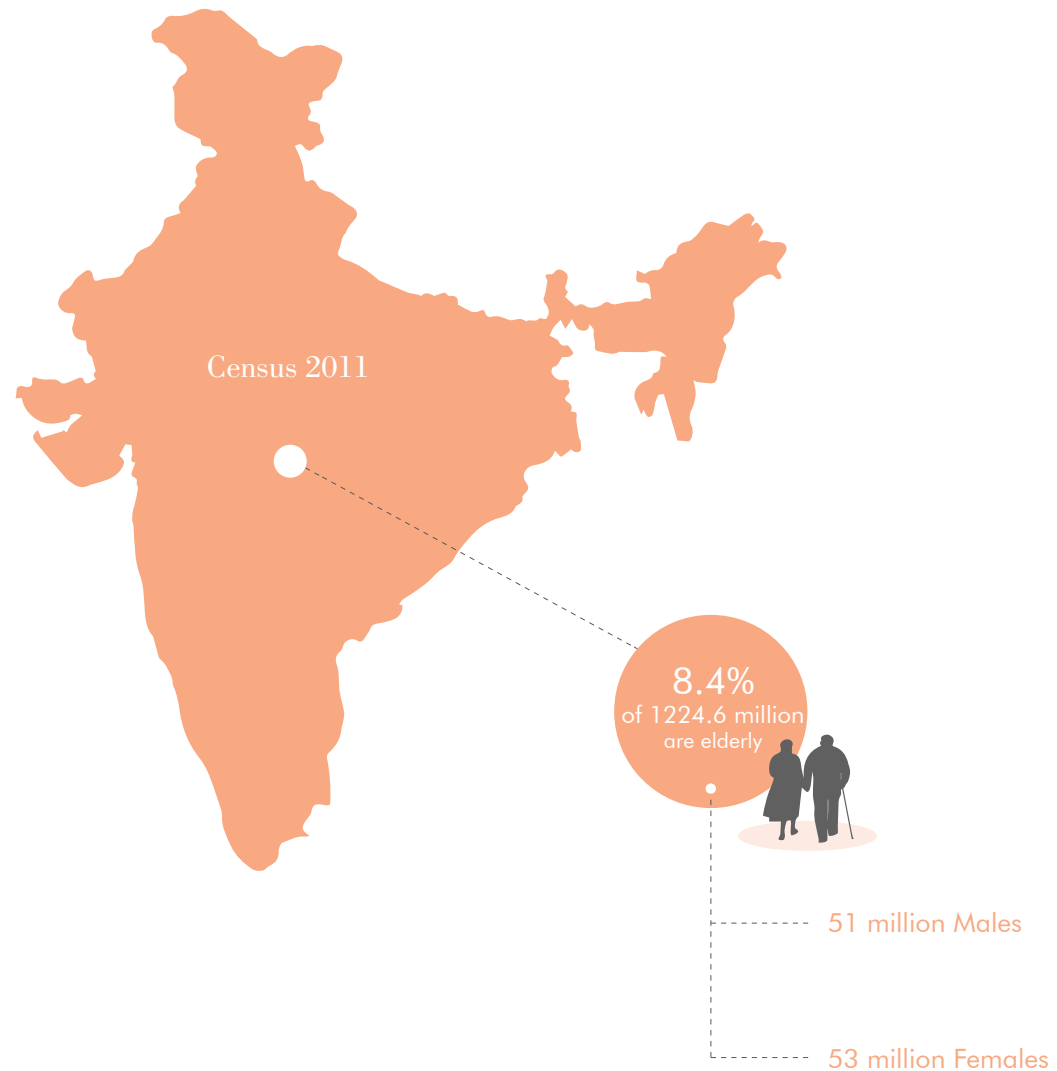
AGING INDIA - Understanding the needs of the elderly

Brief

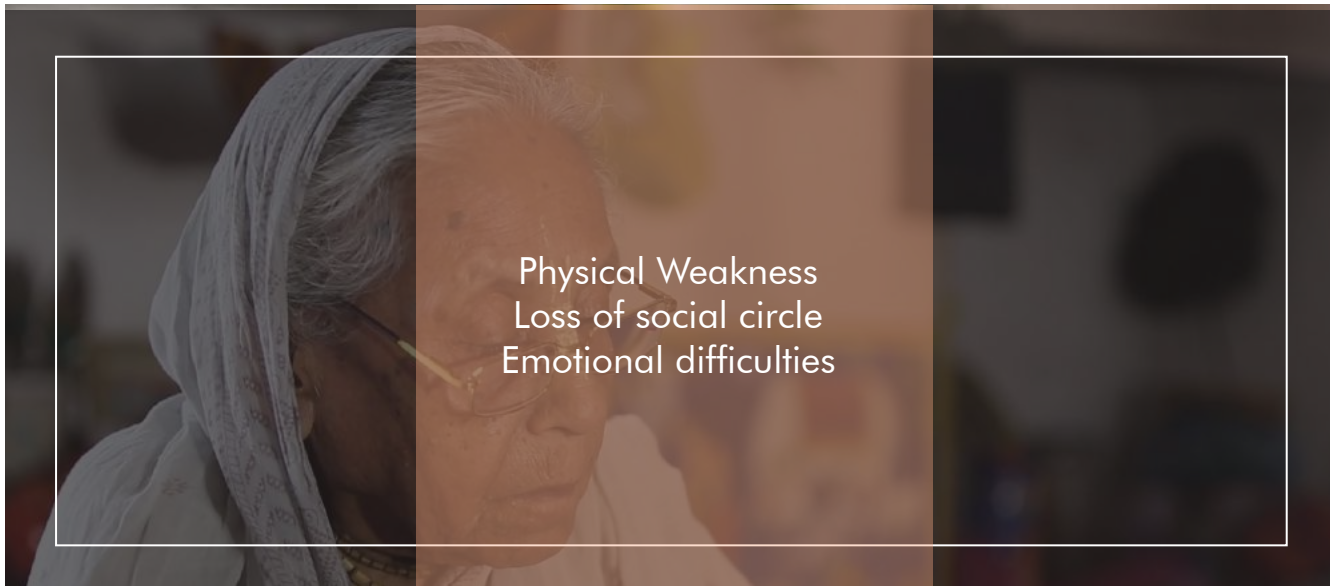
Demographics of India shows that 8.4% of 1224.6 million are senior citizens in which 53 million are male and 51 million are females, Hence we live in a country where there are approximately 104 million elderly.

A report released by the United Nations Population Fund and HelpAge India suggests that the number of elderly persons is expected to grow to 173 million by 2026, 12.3%.

Understanding the problems and needs of the elderly in different levels and making their life easy is the aim of the study and project



PROBLEMS FACED BY THE ELDERLY



Physical Weakness

Old age is a period of **physical decline**. Due to the deterioration of body parts man becomes physically weak. Advance medical technology has **promoted longevity but not good health**. Aged crowd lives longer with a lot of physical weakness. Due to weakness and lack of motivation, they do not take interest in learning new things, accepting change in the environment.

Emotional Difficulties

All of us want to live in a society of belongingness and care. We as individuals want to serve our part in the betterment of society. Senior citizens have worked all of their life and lived among people and still want to live the same way. At old age, they want to serve the society by providing guidance, sharing experience, But **technology has displaced their folk knowledge**. This has lowered their status, they are treated as an inactive burden to society & are not considered as a resource to the family.

Loss of social circle

Growing individualism and rising aspiration among youth and middle-aged people have split family culture. Senior citizens are not able to cope with the sudden social changes that are occurring in the modern world. Also, Their **social life is narrowed down** by the loss of work associate, death of relatives, friends and spouse and weak health which restricts their participation in social activities. The home becomes the center of their social life which gets confined to the interpersonal relationship with the family members. Due to the loss of most of the social roles they once performed, they are likely to be lonely and isolated

This has led to
Loneliness
Powerlessness
Dependency
Feel of neglect

SHIFT IN SOCIAL CULTURE



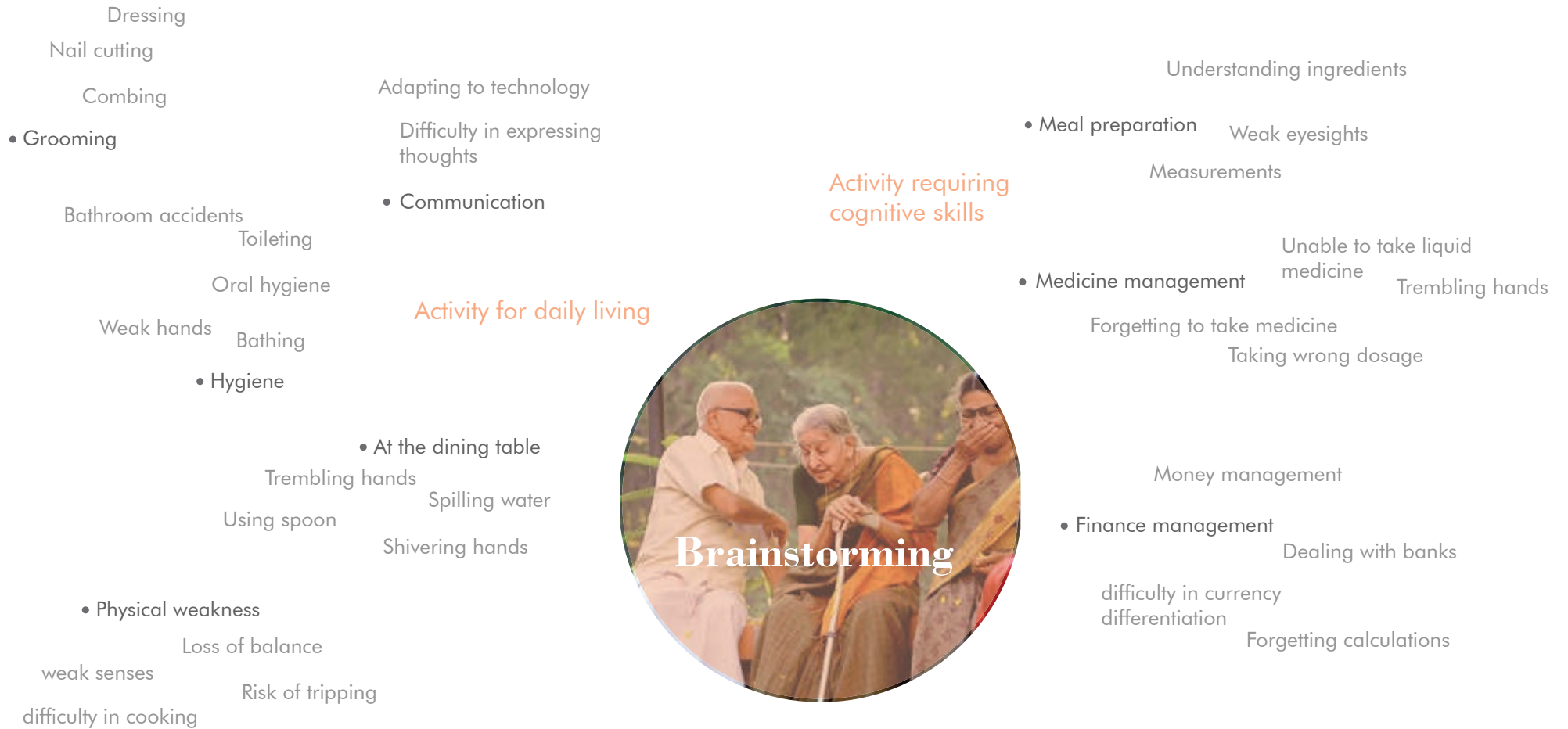
Rise of the nuclear family

In the last few decades, there has been change in the social culture of our country. There has been a gradual disintegration of the joint family system and the emergence of nuclear family.

The concept of Abandoned parents

In recent years the word abandoned parents has come up. This situation arises when the children settle in abroad country for their career and leave their parents in India. They provide all the facilities and quality of life for their parents, But in most cases, parents feel abandoned by their children and slowly start facing loneliness in life. This is one of the causes of depression in the elderly crowd.

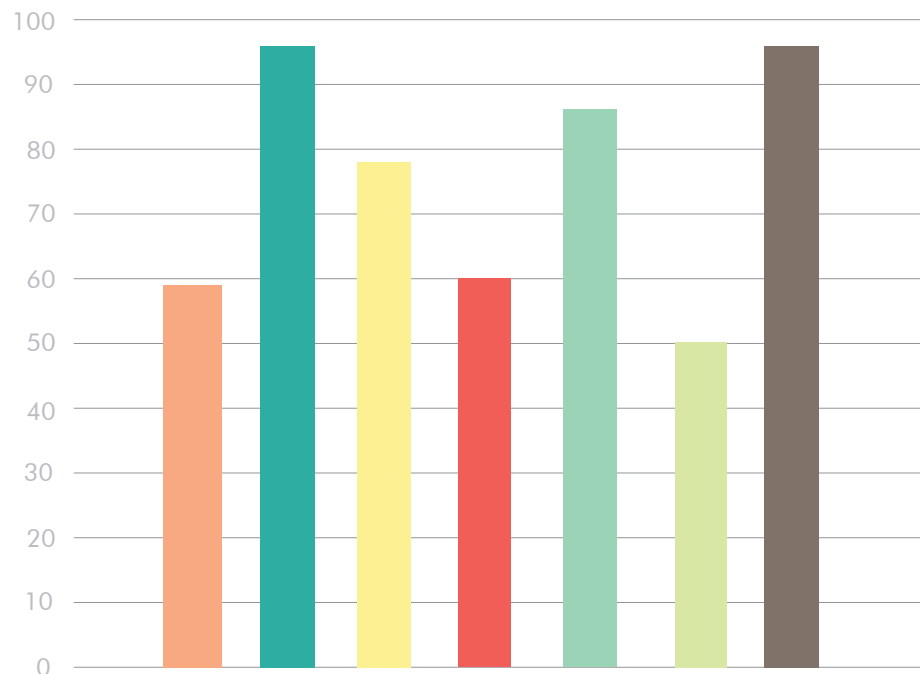
INSIGHTS



FIELD RESEARCH INSIGHTS

Survey analysis

one to one survey was taken in the local area with 43 elderly participants.



Family type: It was found that 58% of senior citizen don't live in a joint family. They live with their spouse or a caretaker. Rest 42% of the elderly live in a joint family.

Fear of fall: it was found that 92% of senior citizen have fear of fall or tripping due to their physical weakness or loss of balance.

Walking stick: 76 % of elderly felt that walking stick adds to their balance and posture, it also made them free to travel outside. Fear of tripping was reduced and made them more confident.

Assisting products: 58% of the elderly crowd are comfortable using assistant products (toilet seats, bathing chairs, etc), few of them feel that using them makes them feel like a handicapped patient or reminds them of hospitals at home.

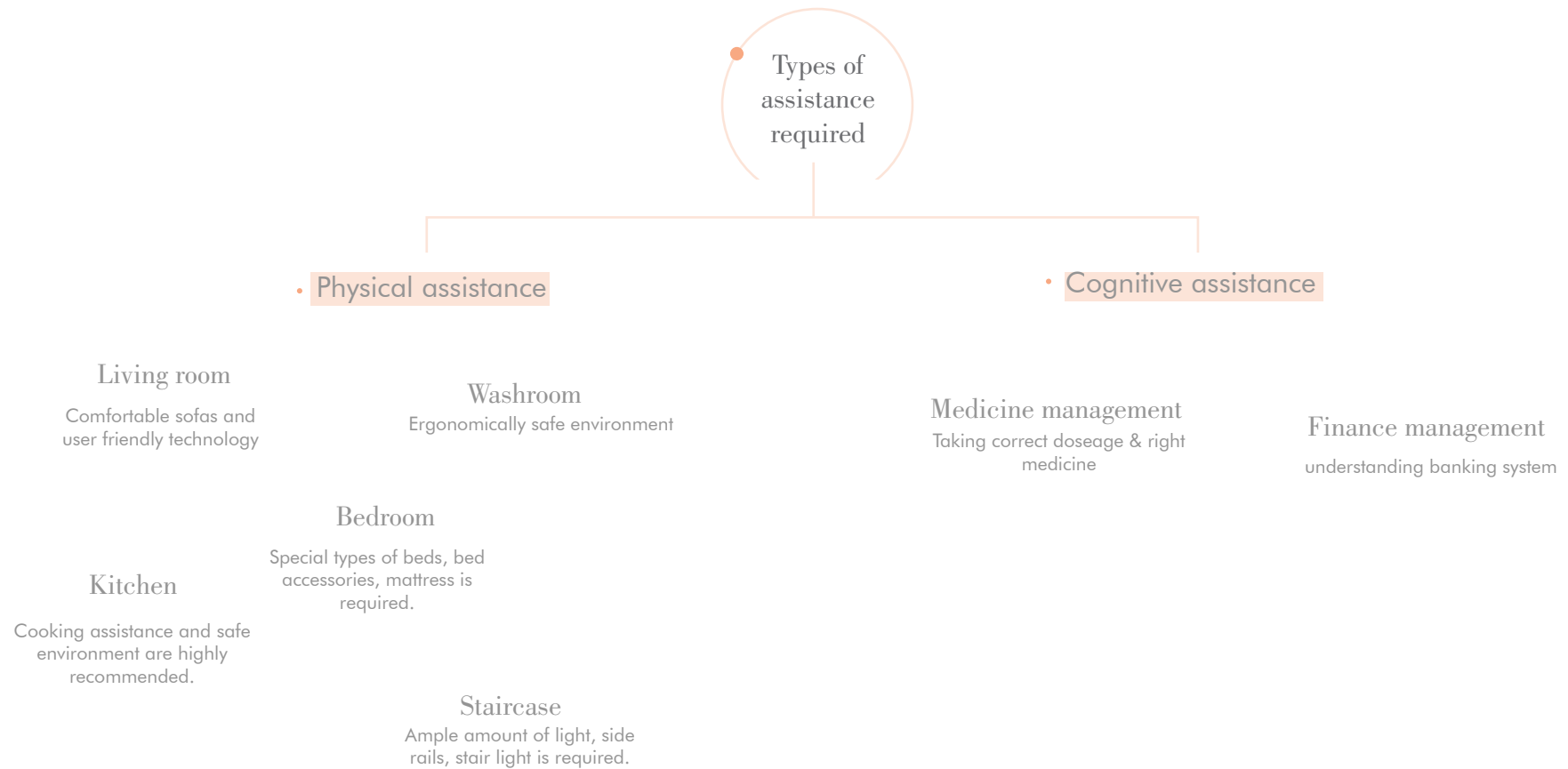
Bathroom falls: Even after having all the assistant products in the washroom, 92% of the elderly fear to fall in bathrooms. Accidents in the bathroom are a common problem faced by the elderly in washrooms.

Grooming: 48% of the elderly find it difficult while grooming. few ladies cant attach a safety pin while dressing up, few face difficulty in smoothening their saree pallu and men face difficulty in trimming, combing, etc.

Technology: 83% of the elderly find difficulty in adapting to new technology. they want to be updated with all home products but it becomes difficult for them to use. eg, microwave, cooler, etc.

SCOPE OF PRODUCT DEVELOPMENT

Study of problems faced by elderly at home



SCOPE OF PRODUCT DEVELOPMENT

BATHROOM

Taskflow of bathing

Collecting required accessories

Entering the bathroom

Change in surface,
chances of tripping

Latching the door

Scared to latch the door
from inside, fear of falling

Hanging the dry clothes

Undressing

Moving to the shower area

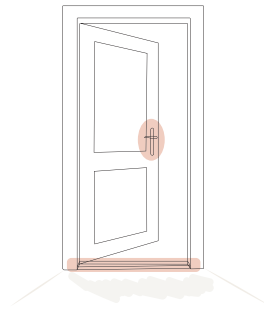
Adjusting placement of chair,
fear of chair slipping

Bathing

- Problem if soap slips and falls
- Face difficulty in reaching to the shelf to pick up products while sitting
- Scared of slippery floor because of soapy water
- Difficulty in washing toes, legs, lower thigh sitting on chair
- Reaching the bucket while sitting on chair becomes a problem.

Changing & dressing

Exiting



In India, 33% of elderly crowd fall at least once a year in the bathroom. Most of the injuries are caused by falling, with those who are aged 65 or older having the highest injury rate including the highest fracture rates and being hospitalized most often.



OPPORTUNITY AREA

PRIVACY LATCHES

LOOK FOR ANTI-SKID FLOORING METHOD

IMPROVE ACCESSIBILITY TO PRODUCTS WHILE SITTING

IMPROVE LIGHTING WHILE ENTERING AND EXITING

MAKE A DRY CHANGING AREA

ACCESSORY FOR CLEANING THEIR TOES AND LOWER THIGH

GROOMING



Combing hair becomes difficult
Pulling up pant's zip
Cutting nails
Cleaning earwax
Buttoning shirt
Clippers
Trimming



Elderly have limited arm mobility, It becomes difficult for them to comb.



Shivering of hands makes it difficult for the elderly to wear a shirt.



Trimming unwanted facial hair becomes hard



Making pleats while wearing a saree becomes difficult



Due to constant shivering of hands, using pins becomes tough



Combing hair becomes difficult
Wearing saree is a difficult task
Cutting nails becomes difficult
Wearing a safety pin is a difficult task
Wearing earrings with screws becomes tough

OPPORTUNITY AREA- MALE

MAKING A GROOMING KIT FOR MEN

ALL IN ONE KIT WHICH IS PORTABLE AND HANDY

OPPORTUNITY AREA - FEMALE

MAKING A PRODUCT WHICH HELPS ELDERLY LADIES WEAR NEAT SAREE.

LOOK FOR AN ALTERNATIVE FOR SAFETY PIN

KITCHEN

Understanding problems faced by the elderly in all the aspects



Chopping vegetables

Chopping vegetables causes cuts sometimes.



Gas stove

Fear of leaving gas on.

Gas stove is on low-flame when they think its off.

Running to the stove to catch a pot that is boiling over.



Cabinets

Reaching lower and higher shelves becomes difficult.

Deep and lower storage that required more bending in reaching for tools and food.

low lighting makes it difficult for them to look for products in lower cabinets.

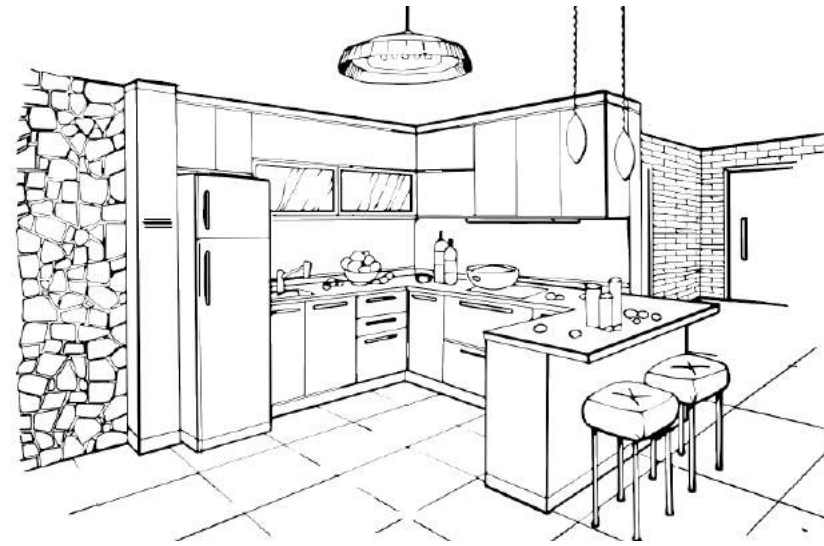


Using electrical appliances

Using mixer becomes a problem due to lack of strength

Cleaning appliances is difficult

Operating microwave becomes hard



Lighting

Light is required above the stove, to check if food is being cooked properly

Low lighting makes it difficult to read small packages

Ample amount of light is required so that they get to know right ingredients are being added.



Cognitive skills

They forget where they have kept food ingredients.

Difficult in recognizing masalas.

Difficulty in understanding measurements

OPPORTUNITY AREA

REORGANISING KITCHEN PRODUCTS ACCORDING TO THEIR SPECIFICATIONS

ADDING TACTILE GUIDANCES FOR STOVE

MAKING THE DISPLAY ON ELECTRICAL APPLIANCES CLEARLY VISIBLE AND SHOULD BE IN VICINITY FOR ALL

ADD TASKLIGHT NEAR THE STOVE AREA

ADD CABINET LIGHTS, TO IMPROVE THE VISIBILITY OF CORNER PRODUCTS

PROVIDE PORTABLE MAGNIFYING GLASS SO THAT SMALL DETAILS ON PACKAGES ARE CLEARLY VISIBLE



Solution development

AGING INDIA - PRIVACY LOCKING SYSTEM

Introduction

Scenario

Product research

Redefined brief

Design criteria

Concept and ideation

Material discription

Theme development

Renders



AGING INDIA - PRIVACY LOCKING SYSTEM

Introduction

The population of senior citizens in India is approximately 12 crores. The growth rate of the senior population is expected to exceed 17 crores by 2026. In such a scenario, many developers are creating housing projects that are meant for senior citizens. It is very important to have houses that are safe for senior citizens. The most important area is the bathroom as a number of accidents take place in a bathroom. Thus, it becomes important to create a home wherein seniors feel safe and secure.

Install door locks that are easy to handle

Ensure safety with grab bars

Safety in bathroom

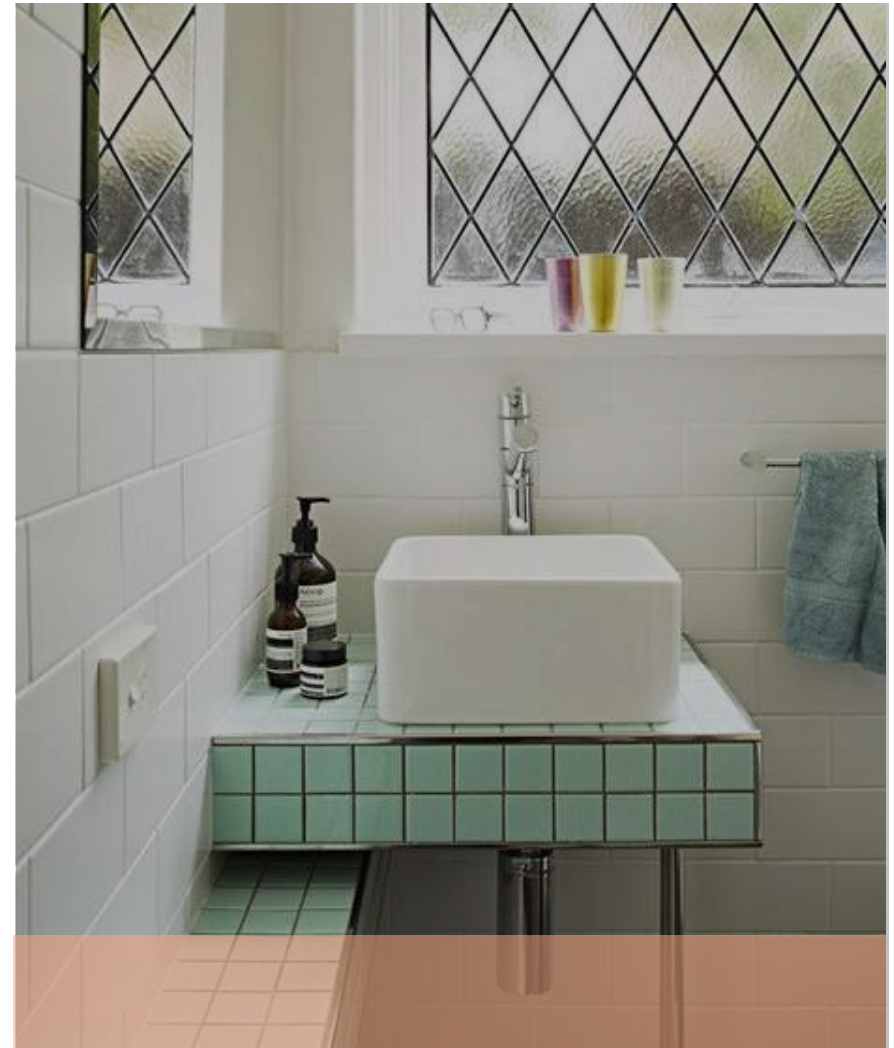
Good Lighting is a must

Anti skid tiling

Important items must be easy to reach

Add shower chair

opt for raised toilet seating



PRIVACY LOCKING SYSTEM

Scenario

In India, 33% of elderly crowd fall at least once a year in the bathroom. Most of the injuries are caused by falling, with those who are aged 65 or older having the highest injury rate including the highest fracture rates and being hospitalized most often. This has built in a fear to lock the doors while using the washroom, the elderly refuse to lock the doors of the washroom.

Why is it a problem?

Locking the door while in the bathroom is a basic privacy need. Everyone wants to lock the door and maintains their privacy. Fear of accidents as mentioned earlier, locking the bathroom door is a problem for the elderly. They don't lock it and also worry about their privacy. Creating a privacy lock can enhance their experience and adds confidence in their daily life activities.

Patients with alzhimers face more difficulties, sometimes patients lock themselves in the washroom and they forget how to unlock. At such situations the caretakes and family members face a lot of difficulties.

How Much Privacy Does Your Bathroom Need?

Bathroom door locks are for privacy than security. So, a bigger, stronger lock isn't always necessary. In fact, it's more important your lock fits your needs and is reliable than it is impenetrable. Depending on your situation, a simple push-button or thumb turn privacy lock, or even no lock at all, may be best.



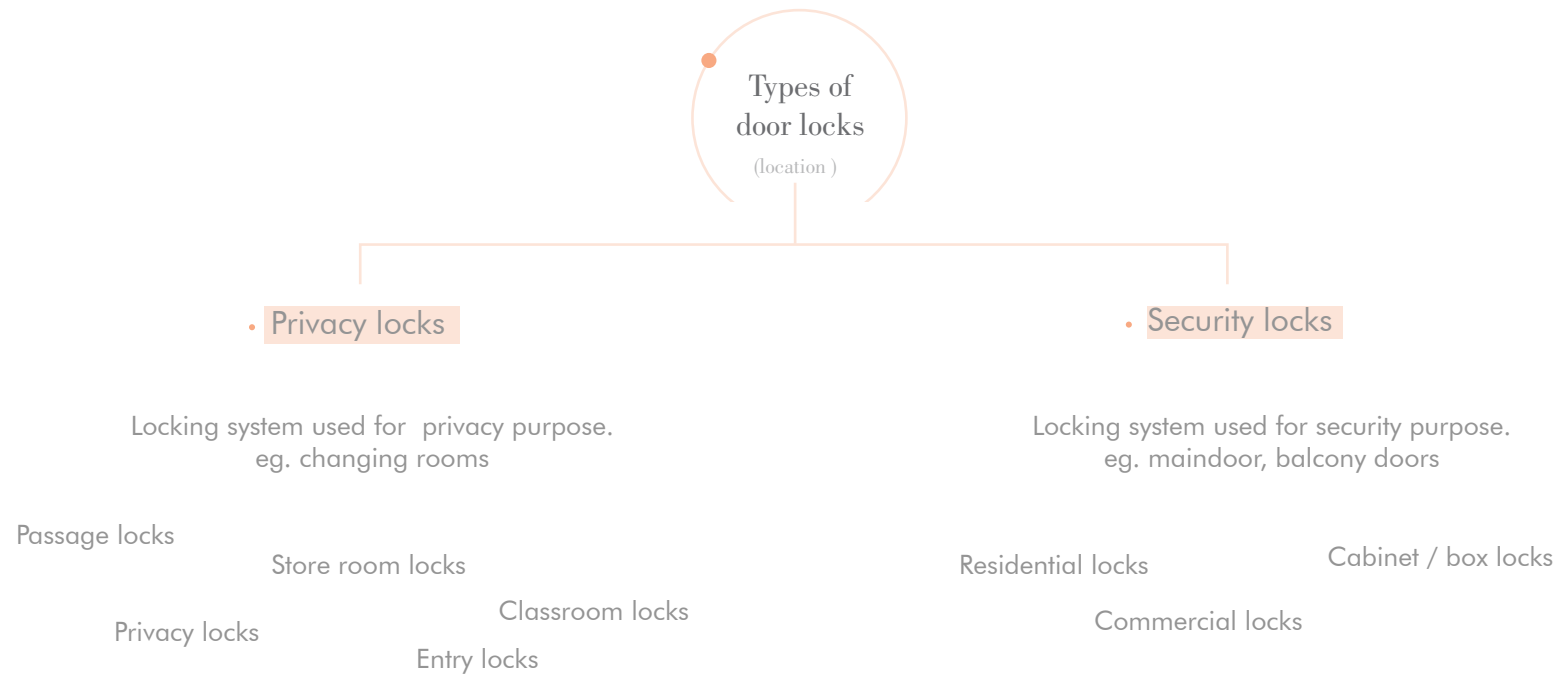
What can be done?

Adding a privacy locking system can be one of the direction. Having a locking system where privacy and emergency entry is the main purpose can help the elderly. It helps in maintaining their privacy and enhances their confidence and trust in their activities.

PRODUCT RESEARCH

Door latch

Locks can be broken down by function (how they lock), by application (what they lock), by style (lever vs knob vs handle), and by grade (how well they are built).



EXITING LATCH TYPES



Knob locks are the most common type of door lock and the method of security for most doors. The lock cylinder is located in the knob instead of the door. Thus, knob locks should not be used on external doors, as they can be broken into with basic tools like a hammer or wrench.



Padlocks belong in the free-standing lock group. They are portable, meaning unlike other lock types, they are not permanently attached to a door or anything that uses it. Padlocks come in a variety of models that are grouped into two main categories: keyed and combination.



Cam locks are a type of fastener that allows storage to be kept intact and do so in a latent way. Cam locks usually come with sets of furniture and cabinet kits. These locks are cylindrical and are situated in the wooden part. A metal tube with a hole in one side helps position the bolt that is inserted. Cam locks use various tailpieces or cams to create a locking mechanism.



Mortise locks are powerful locks used on external doors. They are available in both light and heavy duty models. They are comprised of an internal system which makes them more of locksets than just locks. These locksets can house either knobs or levers and are often comprised of a cylindrical body. They are threaded and utilize mortise components added within the door.



Deadbolts offer the best protection against a burglary or break-in. Lock bolts are moved by turning a knob or key without the use of a spring. Deadbolts feature a unique locking mechanism that resists physical attacks, battering and boring. They cannot be opened with a knife or hand tool.

Type	Security Rating	Best Used for
Padlock	🔒	Lockers, Drawers, Trash Units, Sheds
Cam Lock	🔒	Cabinets, Drawers, Mailboxes and Lower Security OEM applications
Knob Lock	🔒🔒	Interior Doors
Deadbolt	🔒🔒🔒	External Doors
Mortise Locks	🔒🔒🔒	Commercial Doors, Entry Glass Doors and Apartment Doors

Types of privacy latch



Turn button privacy lock

Turn button privacy locks are the most common. To lock, simply turn the button from the inside of the door. From the outside they can be unlocked using a generic tool (generally provided with the lock) or hairpin. To unlock, turn the button from the inside simply turn the button again.



Lever privacy lock

A privacy bolt is similar to a deadbolt, use a flat screwdriver to turn open the lock from the outside if you need to.



Door chain

Acts as a barrier, also helps family members to easy access and easy sight in case of emergency. This type of locking has least privacy.

PROBLEM WITH EXSITING PRIVACY LOCKS

IN CASE OF EMERGENCY, TO UNLOCK FROM OUTSIDE THESE LOCKS REQUIRE AN EXTERNAL TOOL TO UNLOCK, LIKE A PIN OR SCREWDRIVER, ETC. IT BECOMES DIFFICULT TO LOOK FOR THESE PRODUCTS IN A PANIC MOMENT.

REDEFINED BRIEF

TO DESIGN A PRIVACY LOCKING SYSTEM FOR A BATHROOM DOOR WHICH HELPS IN MAINTAINING THE PRIVACY OF THE USER AND ALSO GIVES EMERGENCY ACCESS TO THE OUTSIDERS INSIDE IN CASE OF EMERGENCY

DESIGN CRITERIA

LEVEL OF PREFERRED PRIVACY

The locks on your bathroom doors are not meant to deliver any true security.

EMERGENCY ENTRY

Easy emergency entry process

VISUAL DISPLAY

Adding display of vacant/occupied

LOCKING COMPLEXITY

Locking system should be easy to understand

HARDWARE LONGEVITY

Bathroom door locks need to work reliably

BYPASS SIMPLICITY

The simplicity of a bathroom door lock bypass is extremely important to its overall security

CONCEPT AND IDEATION

Study of existing product mechanism:



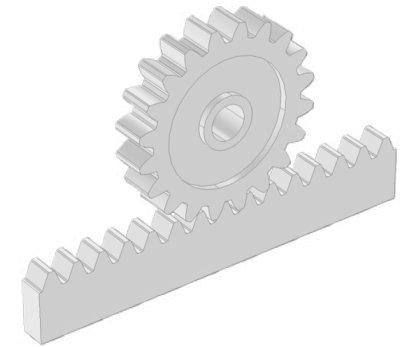
Fear of falling in the bathroom has always been a concern for the elderly they avoid latching the door from inside this creates a privacy concern.

The latching mechanism allows one-way latching, ie locking only from inside but at home, bathroom doors always have to be shut.

Study of existing product mechanism:



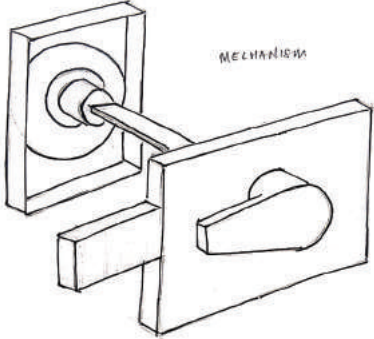
Back plate
Indicator plate
Bolt holder
Bolt / rack
Spindle
Screws
Knob/ pinion
Flat plate
Retainers



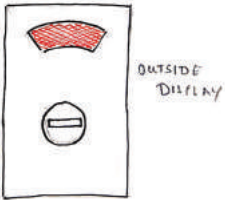
Rack and Pinion

Rack and pinion gears are used to convert rotation into linear motion. The flat, toothed part is the rack and the gear is the pinion. A piston coaxial to the rack provides hydraulic assistance force, and an open centered rotary valve controls the assist level. A rack and pinion gears system is composed of two gears. The normal round gear is the pinion gear and the straight or flat gear is the rack. The rack has teeth cut into it and they mesh with the teeth of the pinion gear.

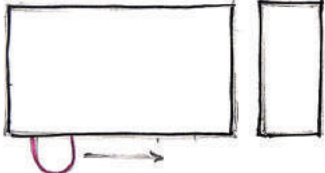
CONCEPT AND IDEATION



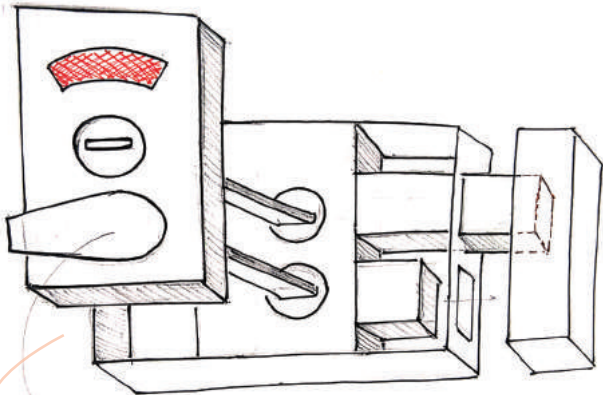
Existing mechanism



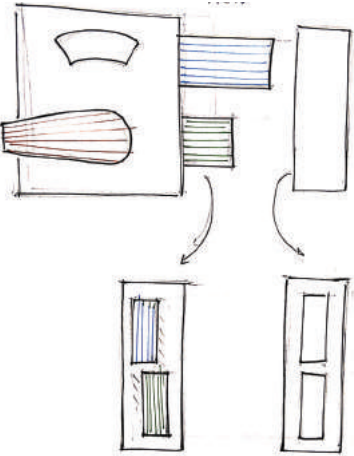
OUTSIDE LOCK



Adding another locking mechanism for outside can be a solution

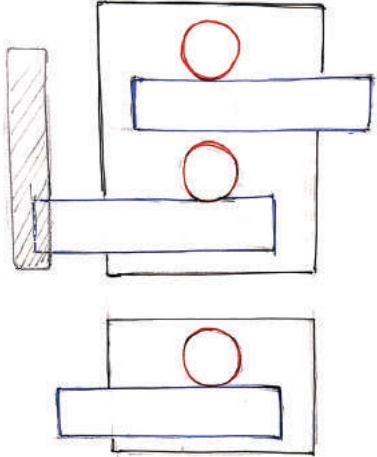


Adding another locking mechanism for outside can be a solution



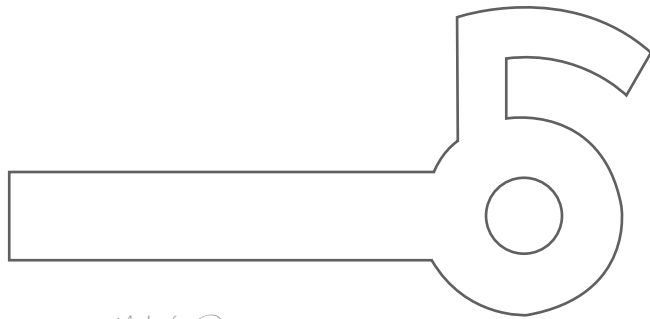
SIDE VIEW

Giving offset can ensure that both the bolts can't be locked at the same time.

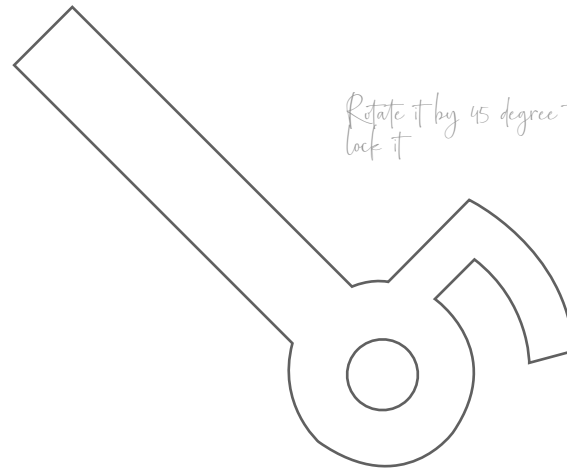


Rack pinion configuration study

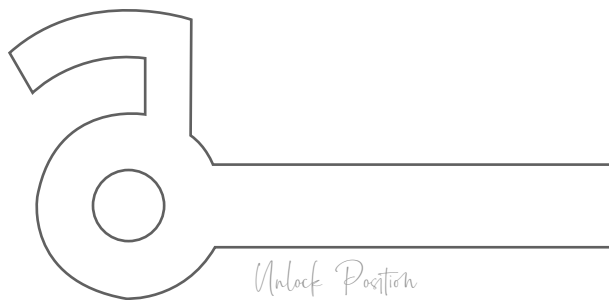
CONCEPT 1- SPRING LOADED MECHANISM



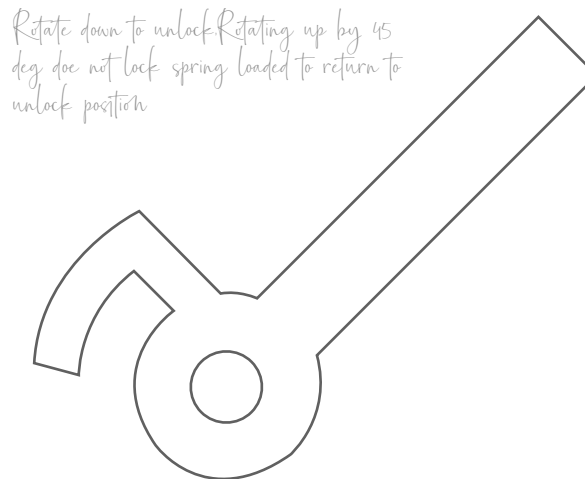
Unlock Position



Rotate it by 45 degree to lock it

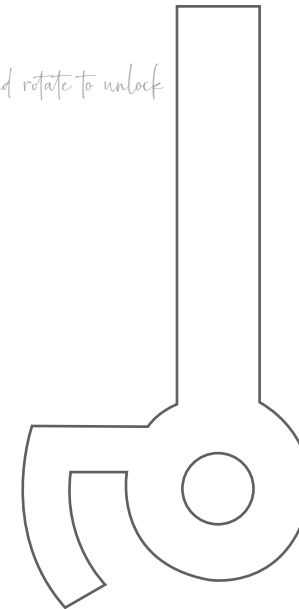


Unlock Position



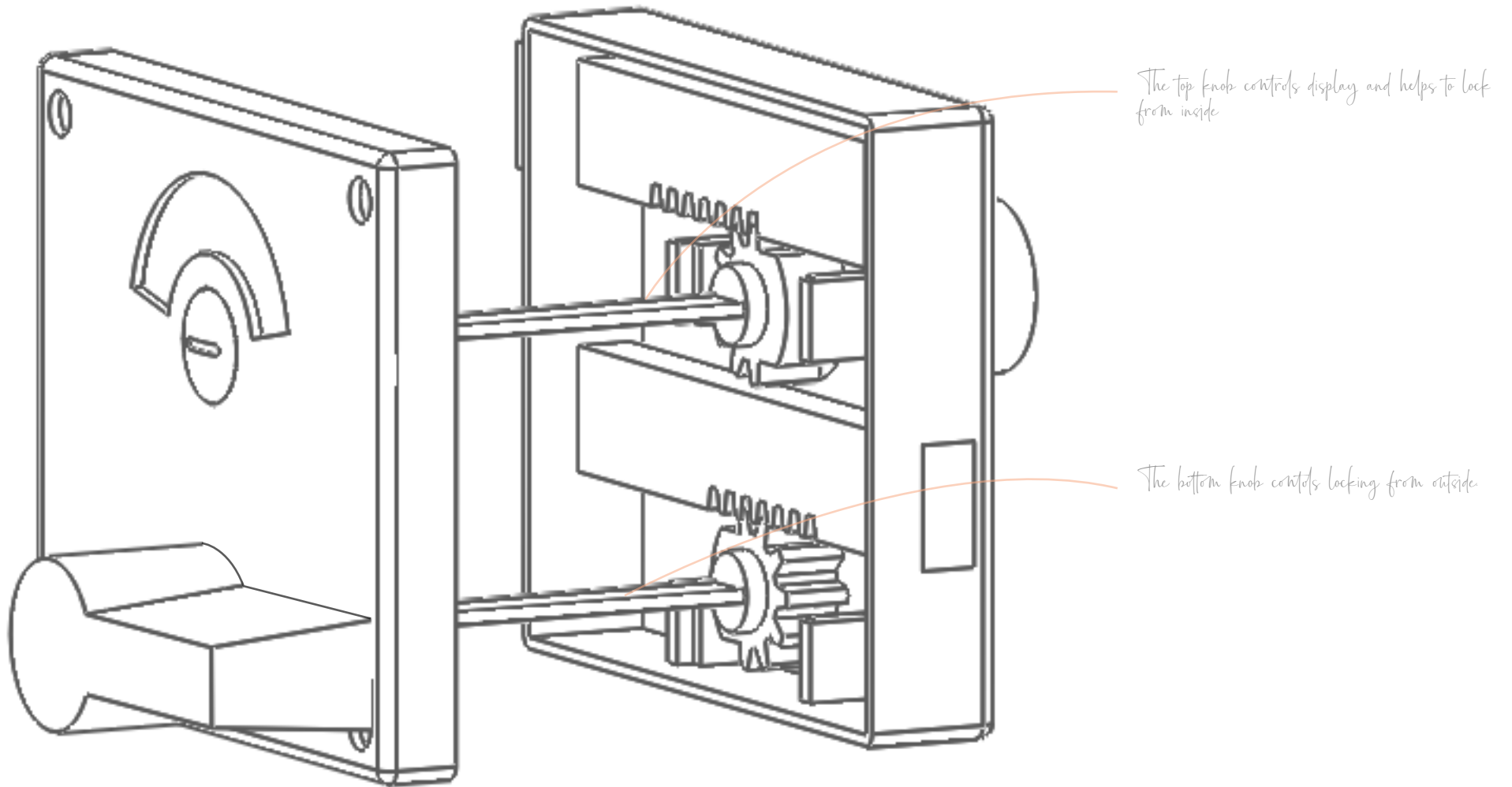
Rotate down to unlock. Rotating up by 45 deg. does not lock. Spring loaded to return to unlock position.

Pull and rotate to unlock



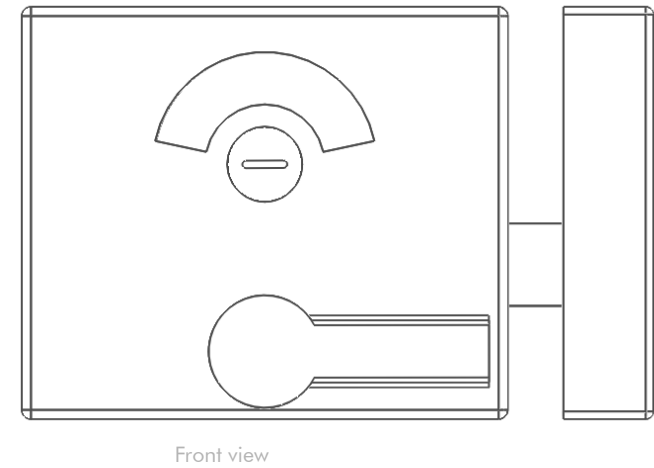
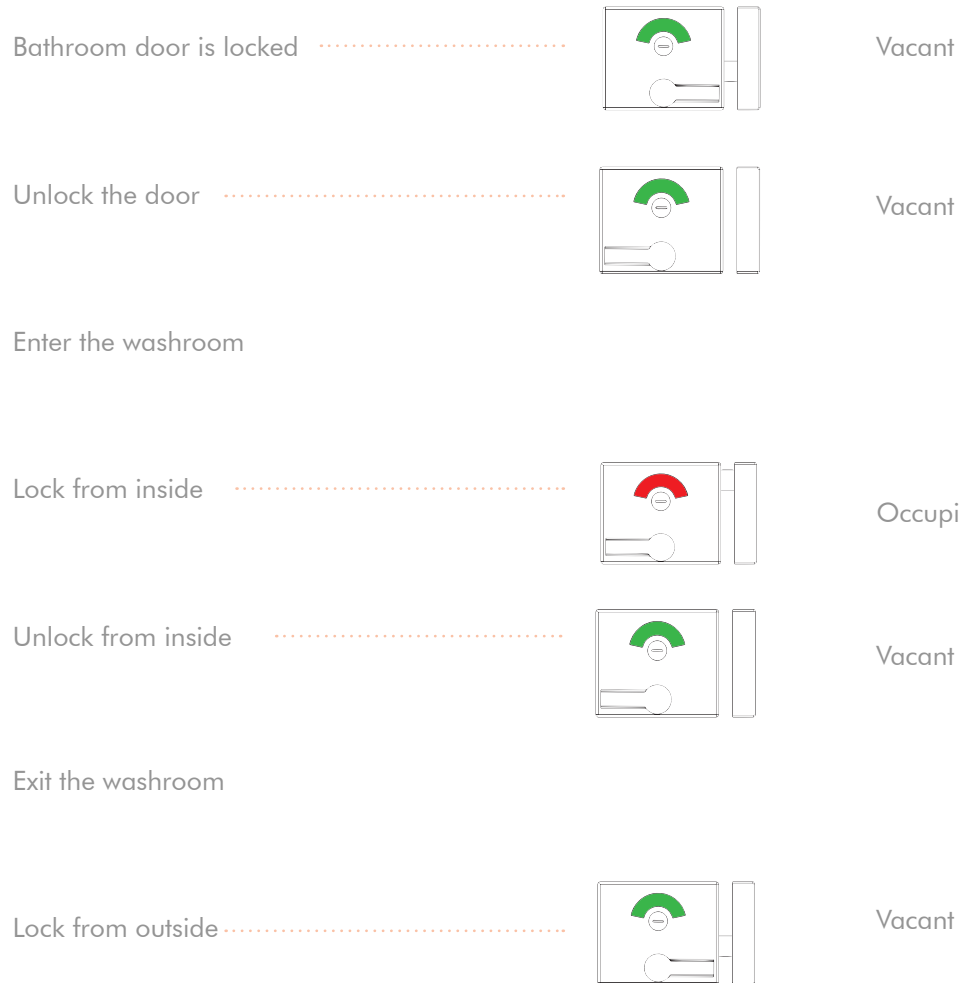
This mechanism doesn't have display indication, depending upon the position of the handle, vacant and occupied has to be understood.

CONCEPT 2 - RACK AND PINION MECHANISM



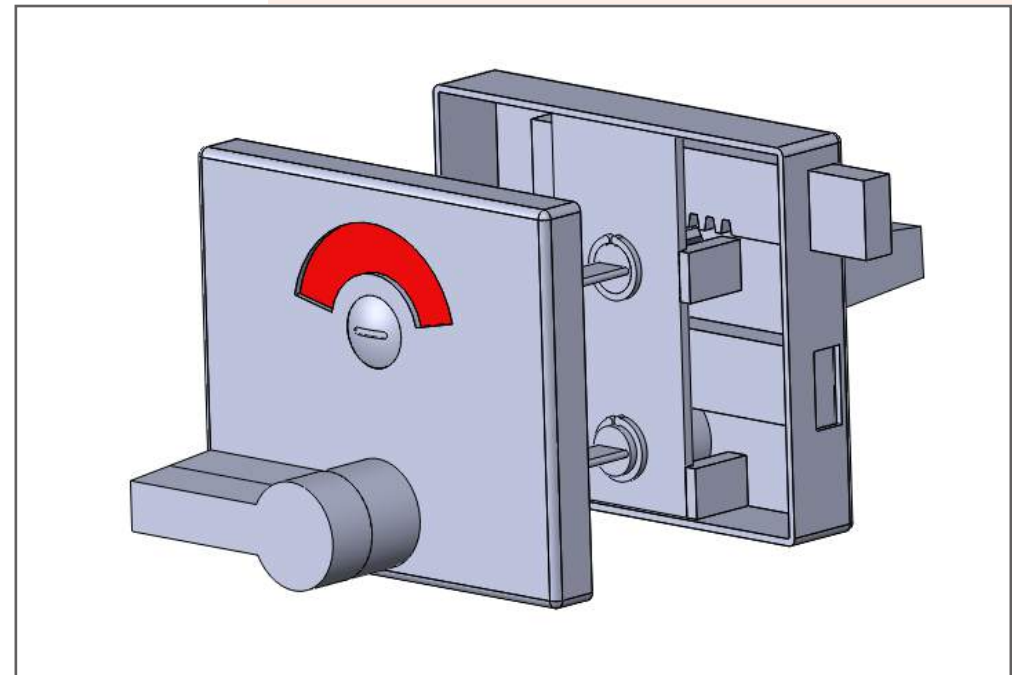
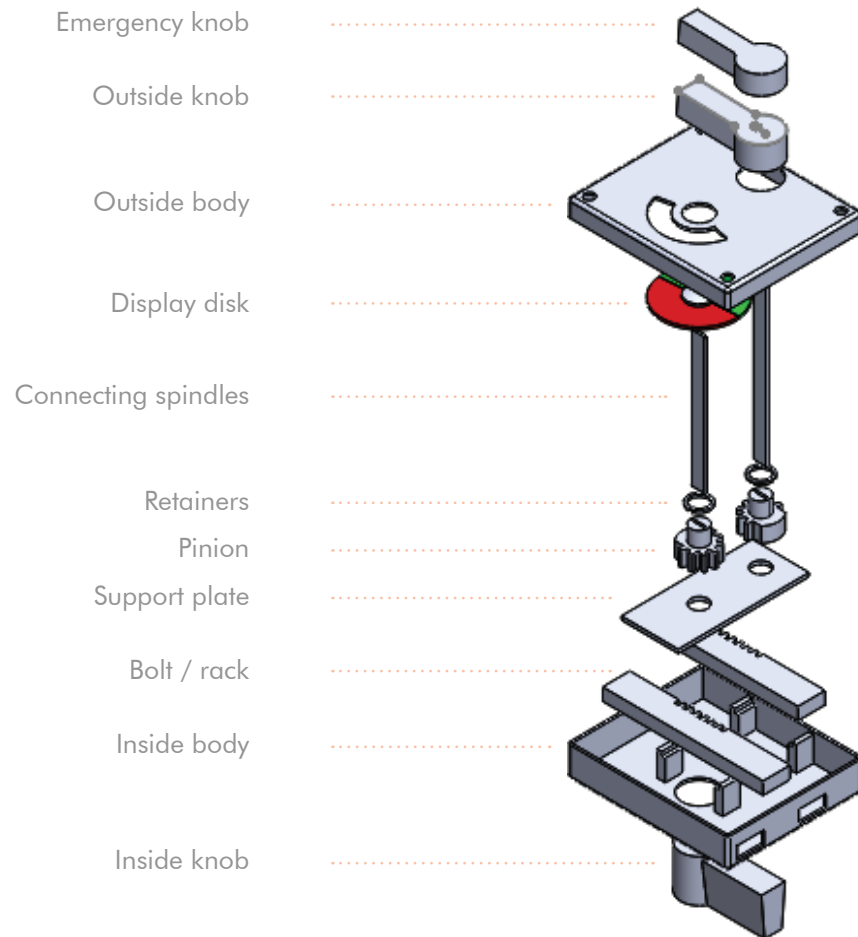
CONCEPT 2 - RACK AND PINION MECHANISM

Task flow and lock mechanism



CONCEPT 2 - RACK AND PINION MECHANISM

Mechanism model

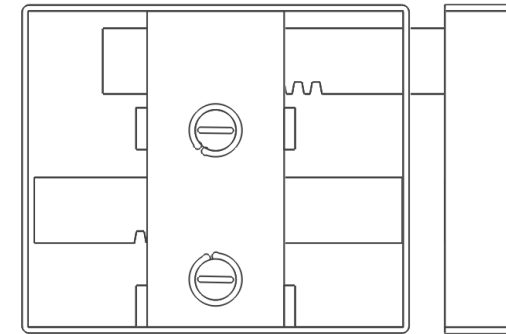
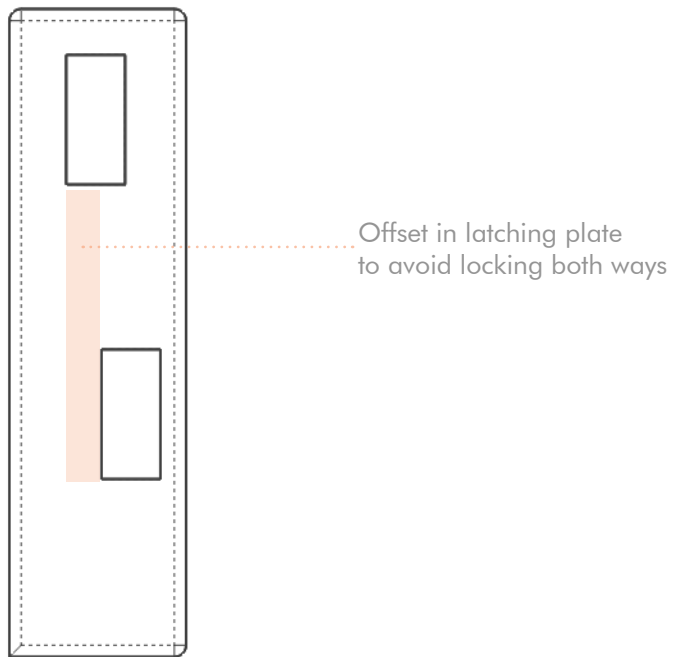


ISOMETRIC VIEW

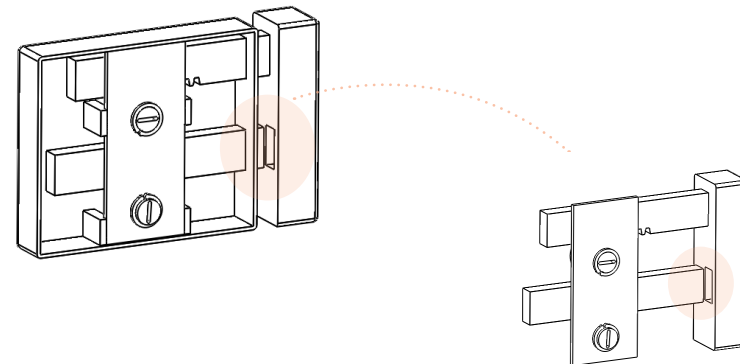
CONCEPT 2 - RACK AND PINION MECHANISM

Locking analysis

When the door is locked from inside, locking from outside shouldn't be possible. This can be achieved by creating an offset in the slot of the latch plate, by doing this it's not possible to lock from both ways.



When the above lock is perfectly in the latch plate



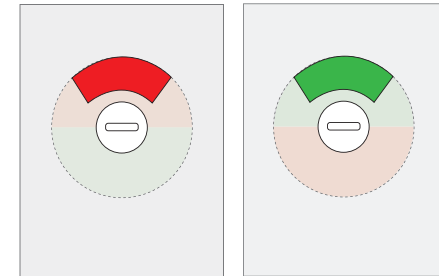
When the above lock is perfectly in the latch plate the below one cant fit, and vice versa.

CONCEPT 2 - RACK AND PINION MECHANISM

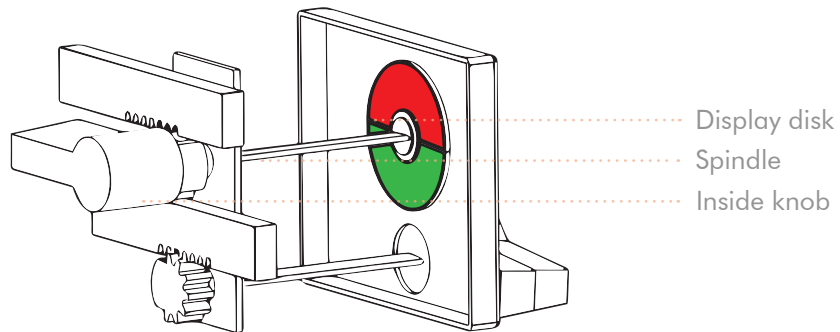
Display mechanism



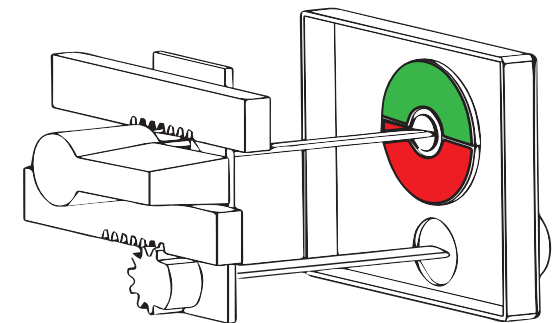
The display is controlled by the display disk. It is connected to the inside knob with the help of spindle, which handles inside locking system. The display plays an important role in the product. It visually gives the information status of the bathroom. The visual display is easy to understand and also help the family member to know if the elderly is in washroom since quite a while.



Display system



Red display when inside bolt is locked

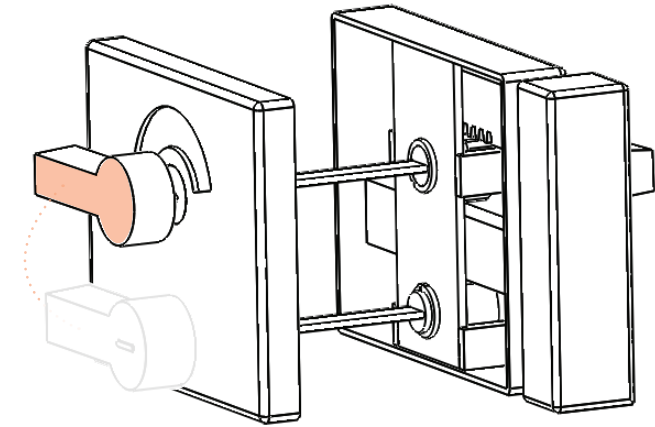


Green display when inside bolt is unlock

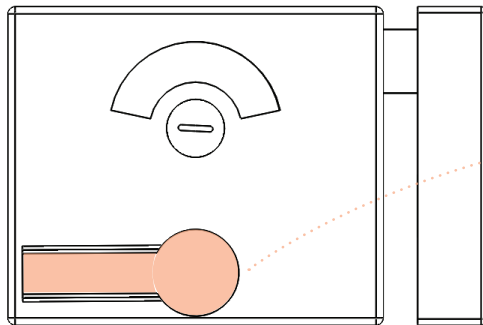
CONCEPT 2 - RACK AND PINION MECHANISM

Emergency access

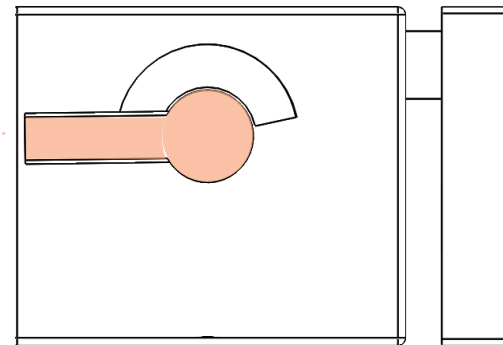
In an emergency scenario, easy access inside is the main priority. This can be achieved by the knob that is connected from outside. The knob has a tight slide fit which in case of emergency can be removed and attached to the top pin which is connected to the spindle to unlock inside the bolt.



Emergency access system



In case of emergency, the knob part is removed and attached to the above pin which is connected to inside knob.

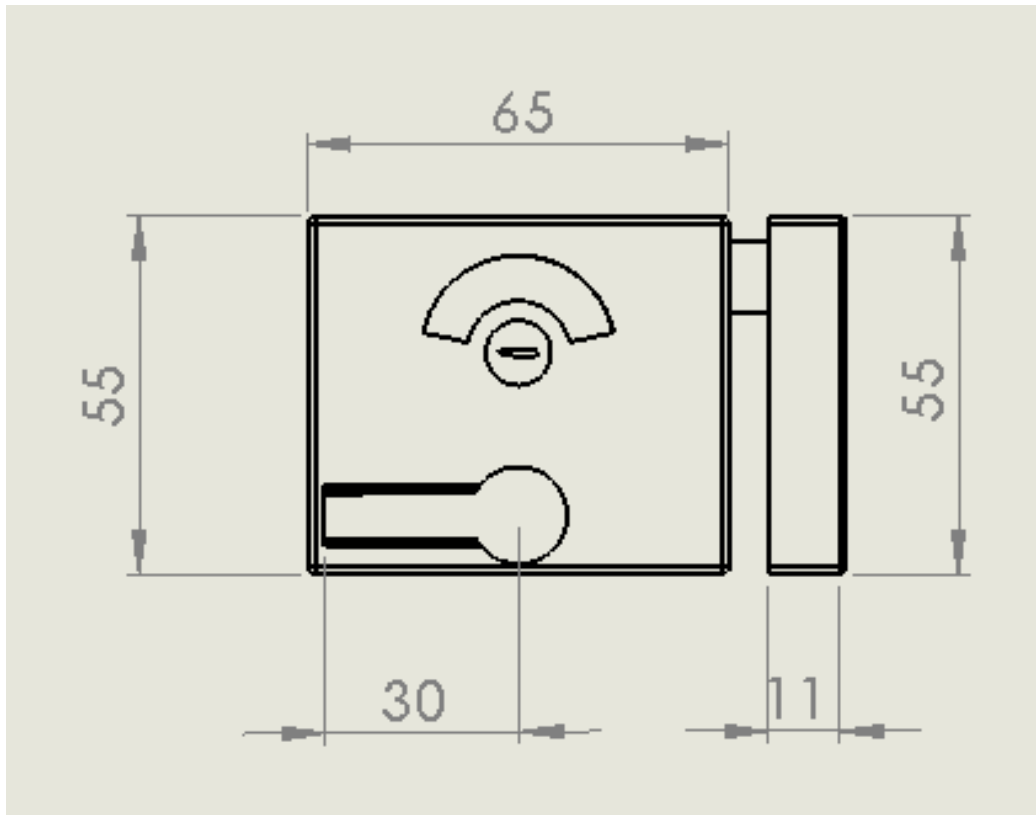


Reposition the knob for access

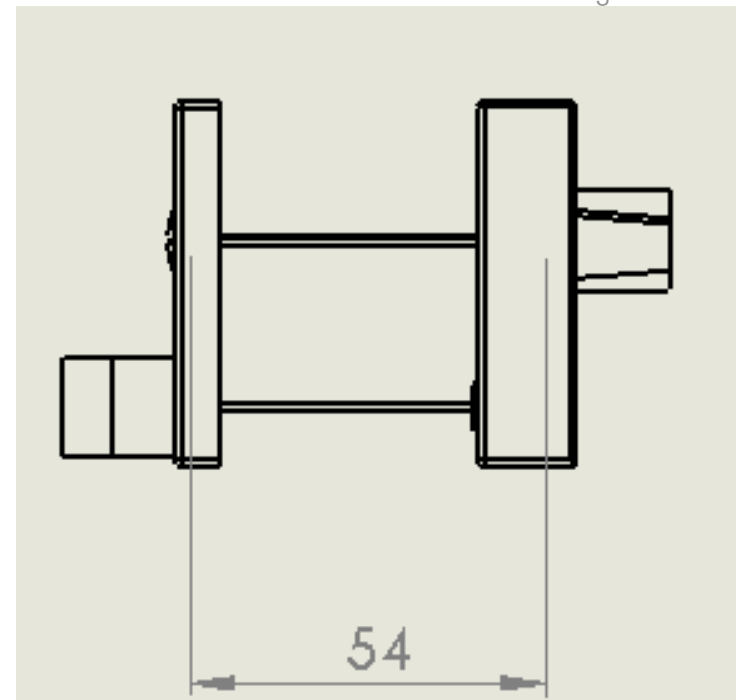
CONCEPT 2 - RACK AND PINION MECHANISM

Dimension analysis

Front view



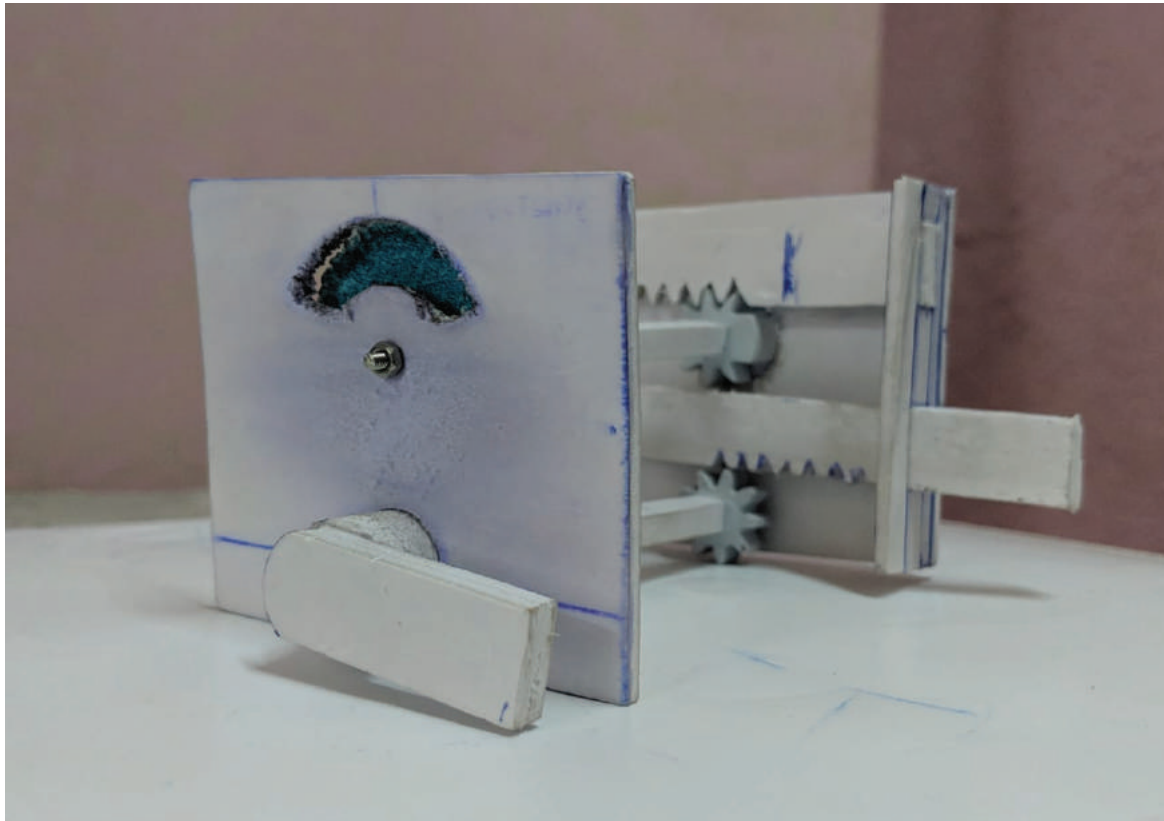
Right side view



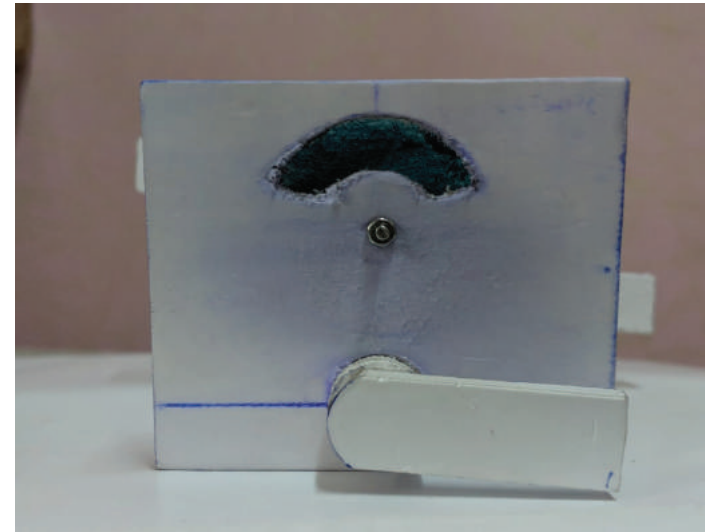
All dimensions are in mm.

Mock up

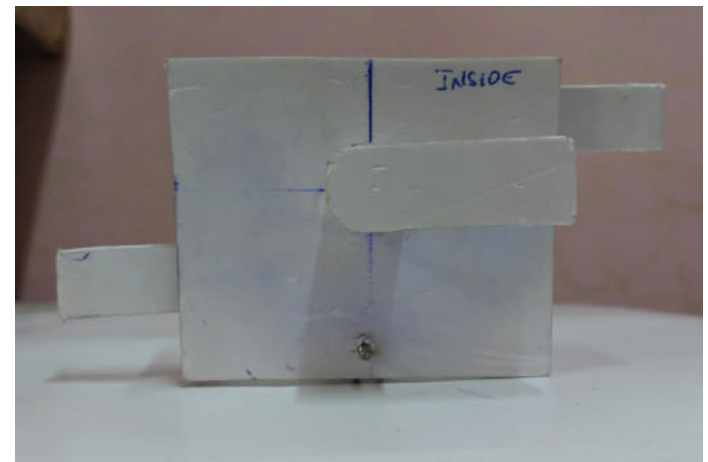
Isometric view of the model



Front view



Back view



The model was made with foam board to understand the exact working of the mechanism and dimensions.

MATERIAL DESCRIPTION

Material Understanding

The core material used in making the privacy door lock is brass. Later it is polished according to finish required.

Why brass?

Brass is highly durable

Brass has a low friction surface which makes it ideal for connected moving parts. This is why it is the perfect choice for producing high use door furniture that will prove durable with minimal servicing.

Brass is corrosion resistant

Brass door furniture provides durable performance in high corrosion applications. Unlike other commonly used materials, it contains no iron so it will not rust or tea stain in high corrosion environments.

Brass is green

Brass is a highly machinable material making it able to be accurately manufactured with less scrap, less rework and less energy than other materials. Products made from brass generally have good “cradle-to-grave” characteristics as not only do they show good durability but brass is also readily recycled at the end of the products working life.



Finishes

Satin chrome finish

Satin Chrome has a moderately contemporary look and feel that takes its origins from the Bauhaus style movement. Considered to be a highly amenable finish, it is often used in commercial applications.



Satin nickel finish

Satin Nickel saw its rise to popularity alongside the Victorian and Mid-Century Modern design movements. It prefers to live among bold, geometric shapes and patterns, bright solid colors and edgy, unconventional furniture.



Bright chrome finish

Bright Chrome finds its inspiration in the Art Deco movement and the jazzy style of the roaring 20s, but is able to seamlessly transition into the minimalist approach of the 1930s and 40s as well. It rarely scratches, fades or deteriorates.



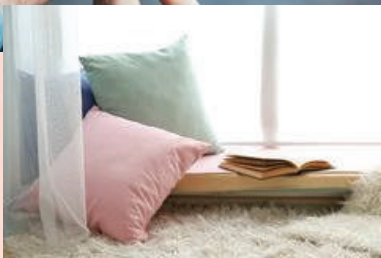
Satin brass finish

Satin Brass can be considered the “modern brass alternative.” It stems from the Victorian Era and offers a more refined take on the rustic look of unfinished brass.



IDEATION - FORM DEVELOPMENT

MOOD BOARD



Confidence
Help
Assist
Easy
Comfort
Privacy

DESIGN THEME

FORM DEVELOPMENT

MODERN HOME - MINIMALISM

CONTEMPORARY HOME - TRADITIONAL + MINIMALISM

CONCEPT 1

MODERN HOME - MINIMALISM

IDEATION - FORM DEVELOPMENT

Minimalism

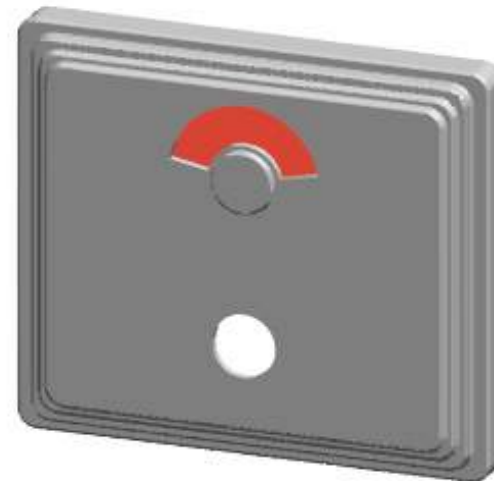
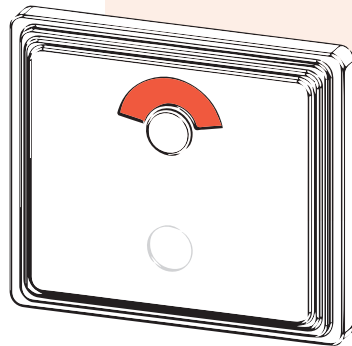
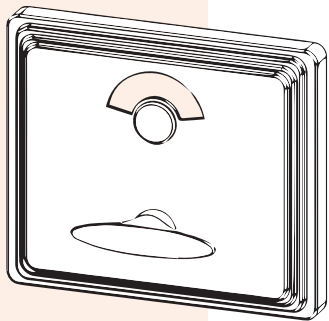
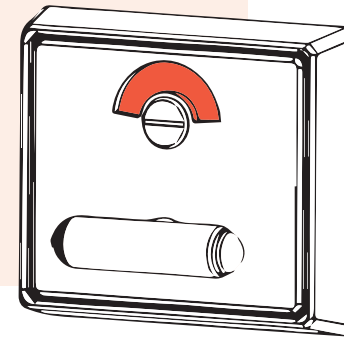
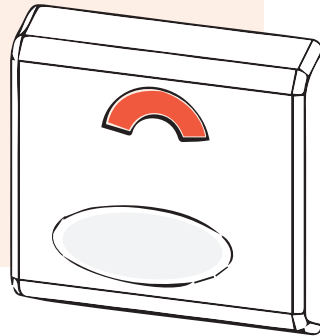
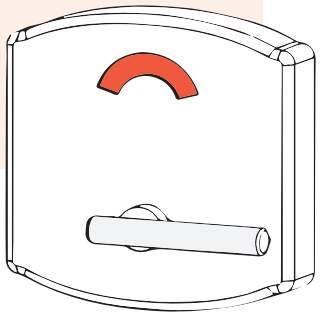
INSPIRATION BOARD
Modern homes



Minimalism
Edgy
Metallic
Modern
Contemporary

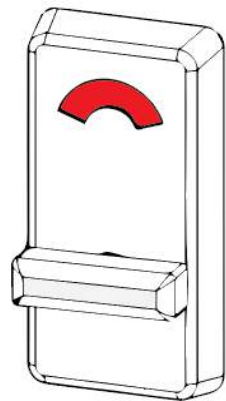
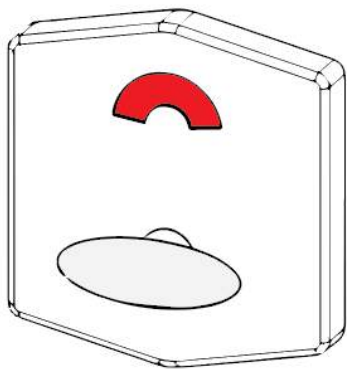
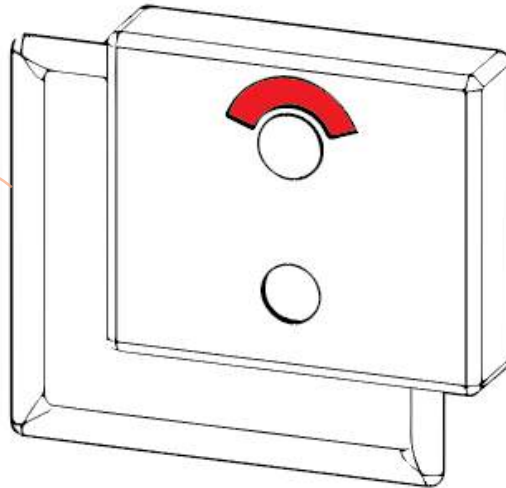
IDEATION - FORM DEVELOPMENT

Modern homes | minimalism - explorations



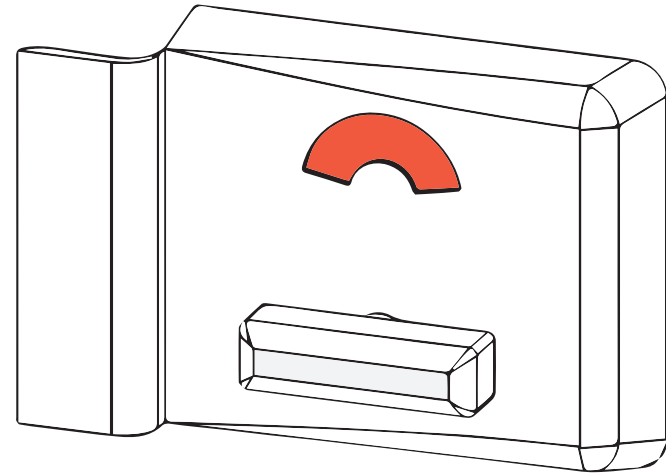
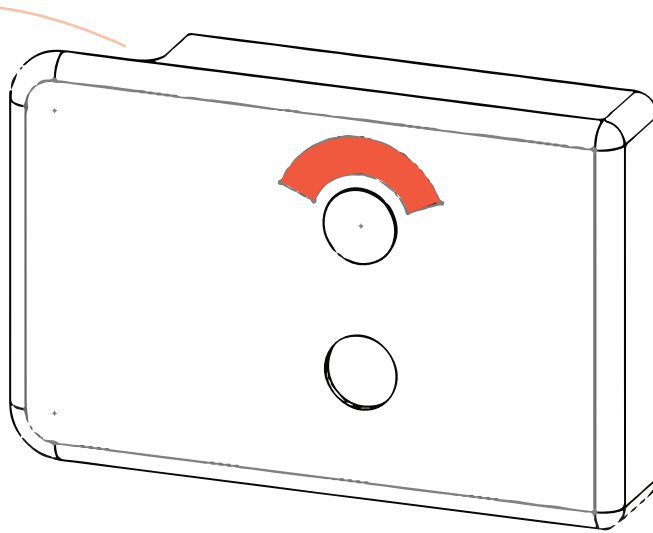
Modern homes | minimalism - explorations

Concept of having handle
to the lock

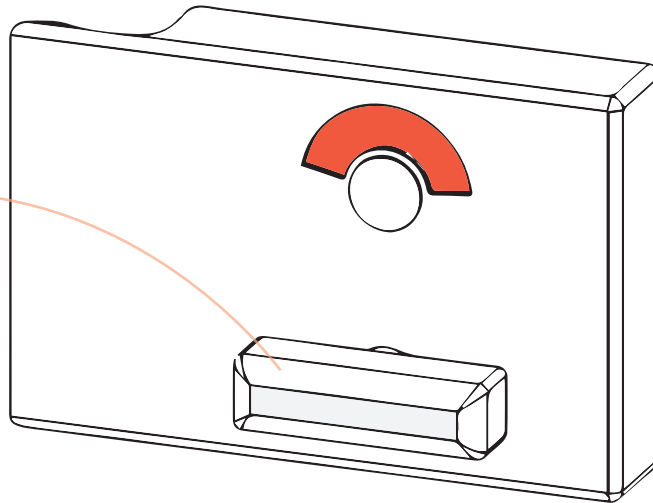


Modern homes | minimalism - explorations

Attaching a door handle to the locking system



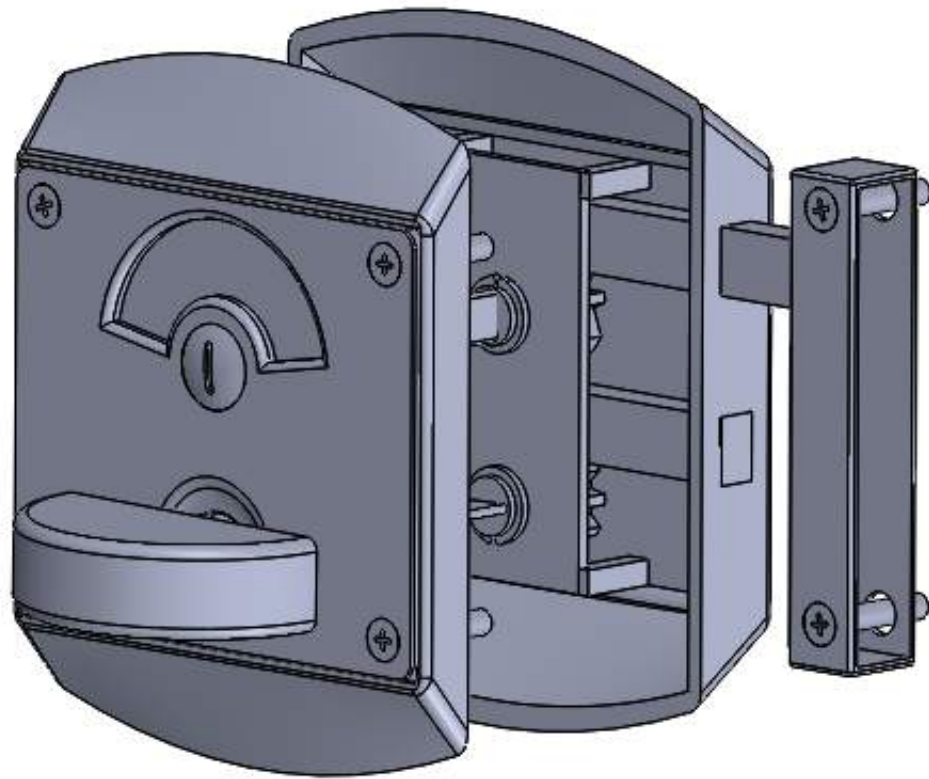
Having wide and strong knobs, which gives good grip for elderly



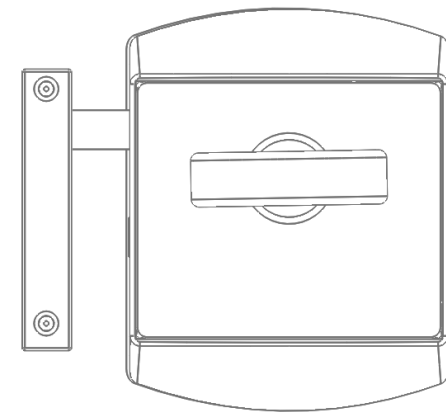
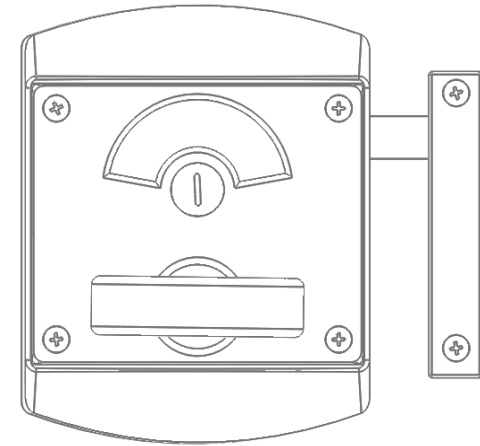
FINAL CONCEPT 1 & RENDER

MODERN HOME - MINIMALISM

FINAL CONCEPT 1



Isometric view



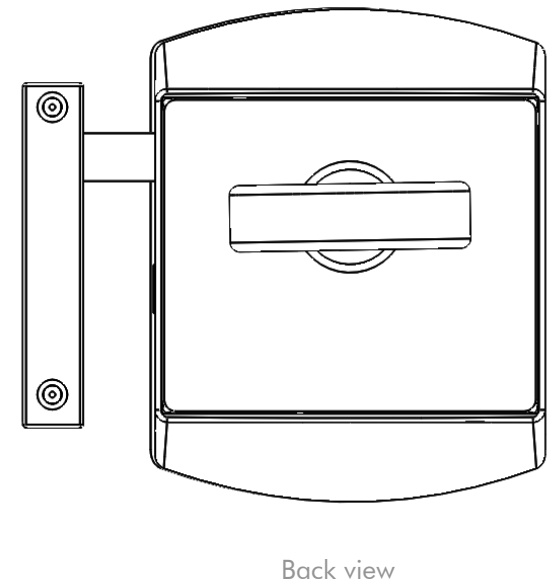
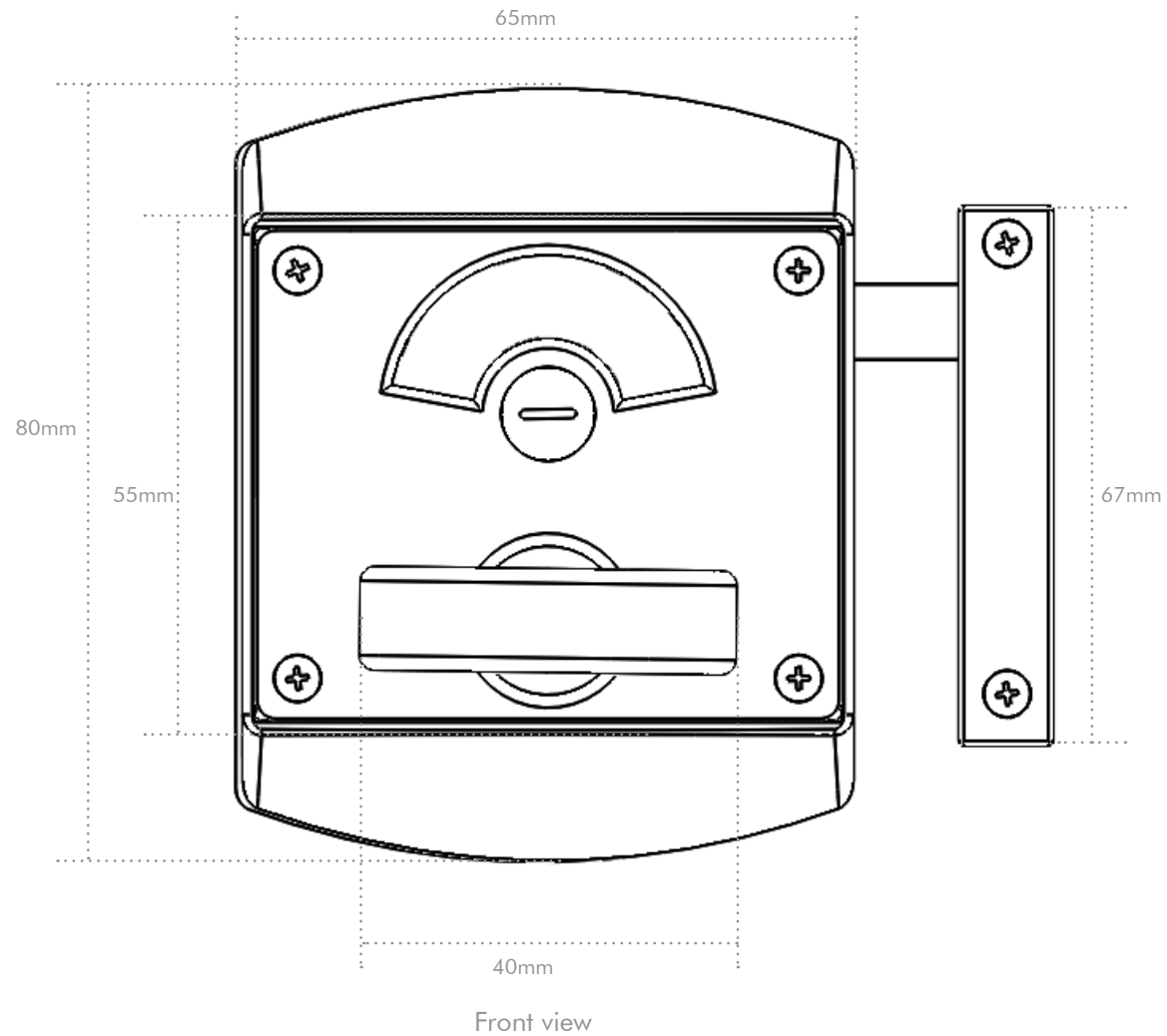
FINAL CONCEPT 1

Product environment



FINAL CONCEPT 1

Dimensions



FINAL CONCEPT 1

Render



Material : Brass

Finish : Chrome rough finish

FINAL CONCEPT 1

Renders



Backside view

Locking from inside



Front side

Display system in the lock

FINAL CONCEPT 1

Renders



Material : Brass

Finish : Chrome Brushed finish



Material : Brass

Finish : Chrome Glossy finish

FINAL CONCEPT 1

Environment renders





CONCEPT 2

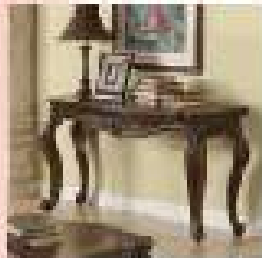
CONTEMPORARY HOME - MINIMALISM + TRADITIONL

IDEATION - FORM DEVELOPMENT

Minimalism + traditional

INSPIRATION BOARD

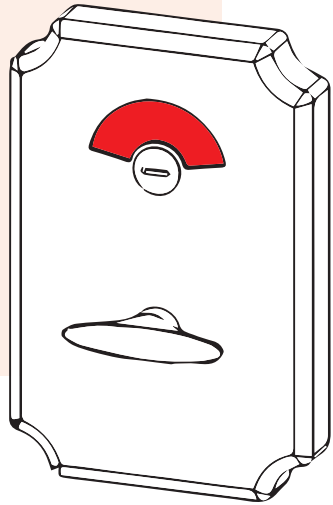
Traditional homes



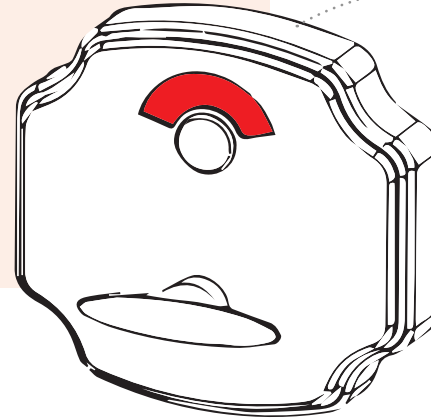
Minimalism
Curvy
Brushed metallic finish
Modern
Contemporary

IDEATION - FORM DEVELOPMENT

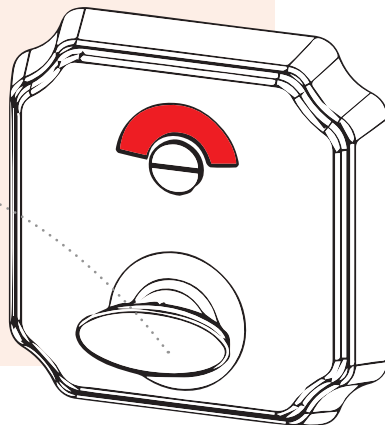
Contemporary Homes - Explorations



Taking inspiration from traditional locks and products

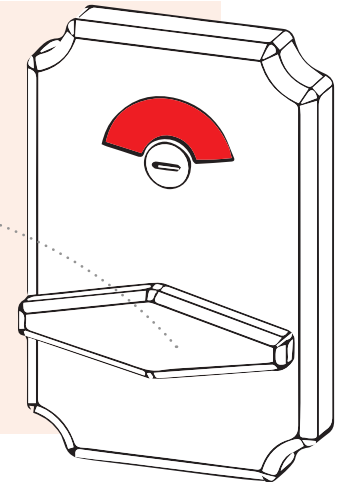


layered form, taking inspiration from traditional products



Sturdy and wide knob for good grip for elderly

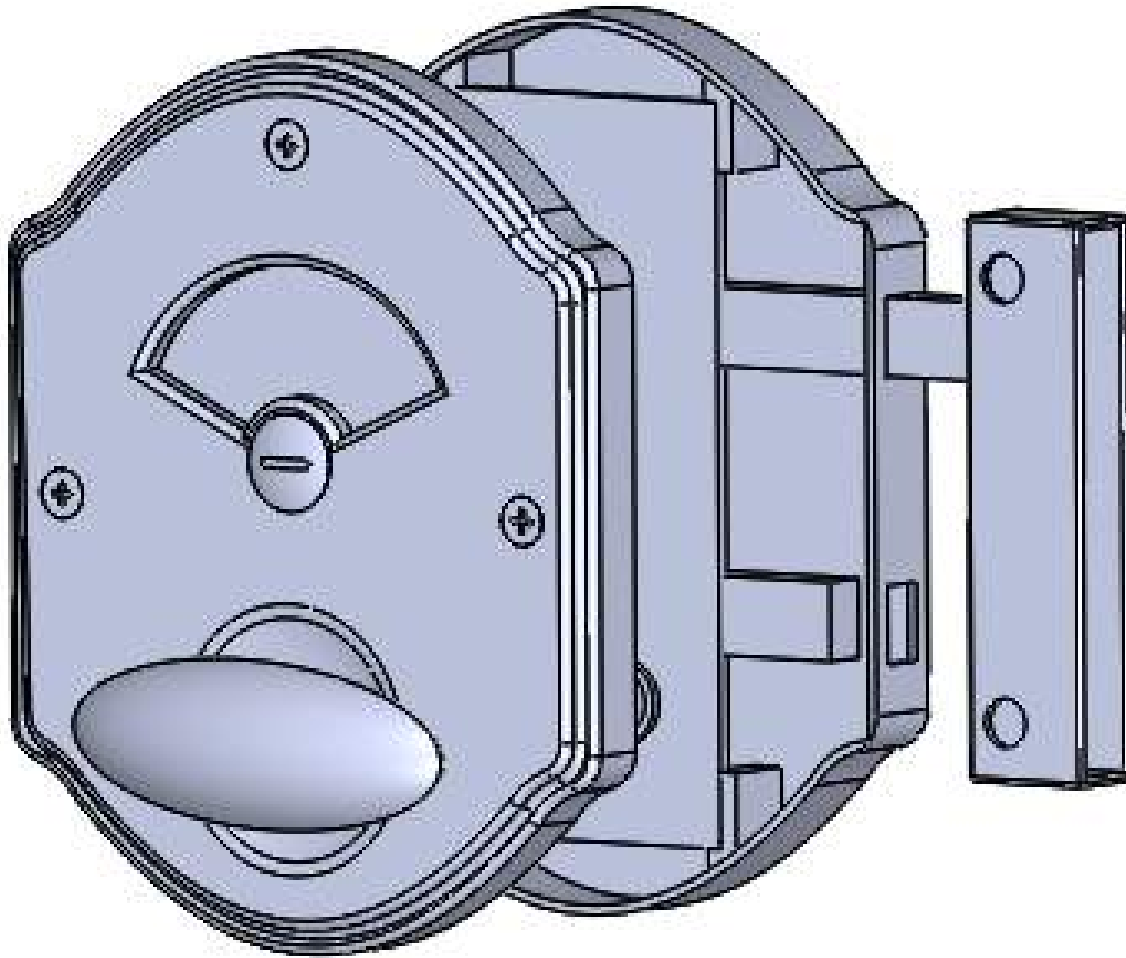
Providing wider knob for elderly needs.



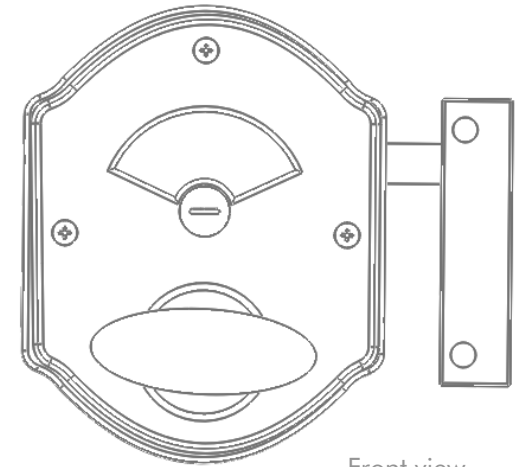
FINAL CONCEPT 2 & RENDER

CONTEMPORARY HOMES - MINIMALISM | TRADITIONAL

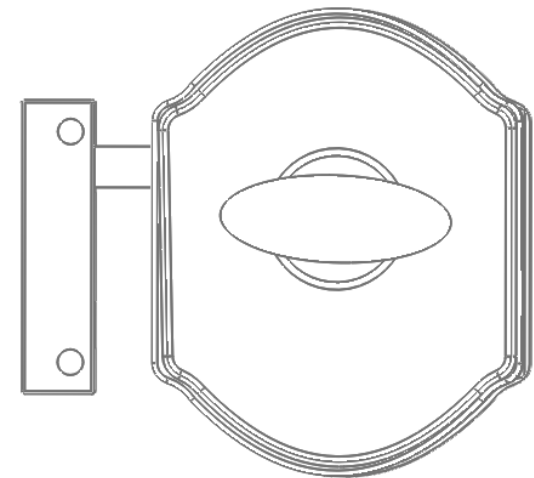
FINAL CONCEPT 2



Isometric view



Front view



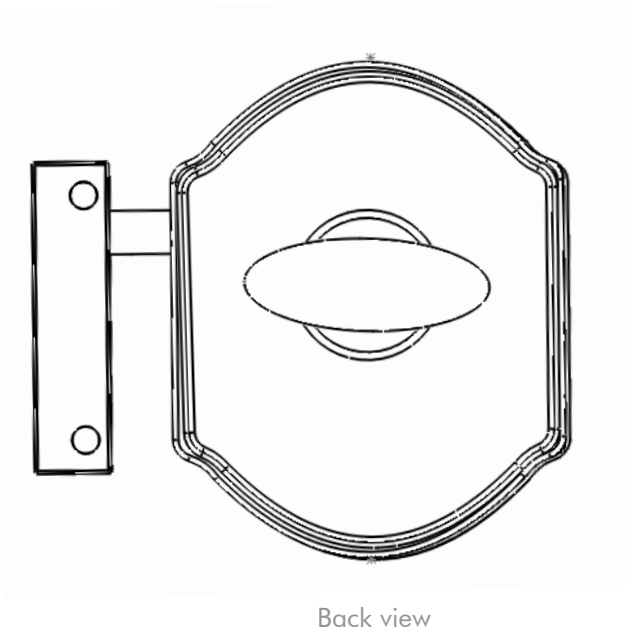
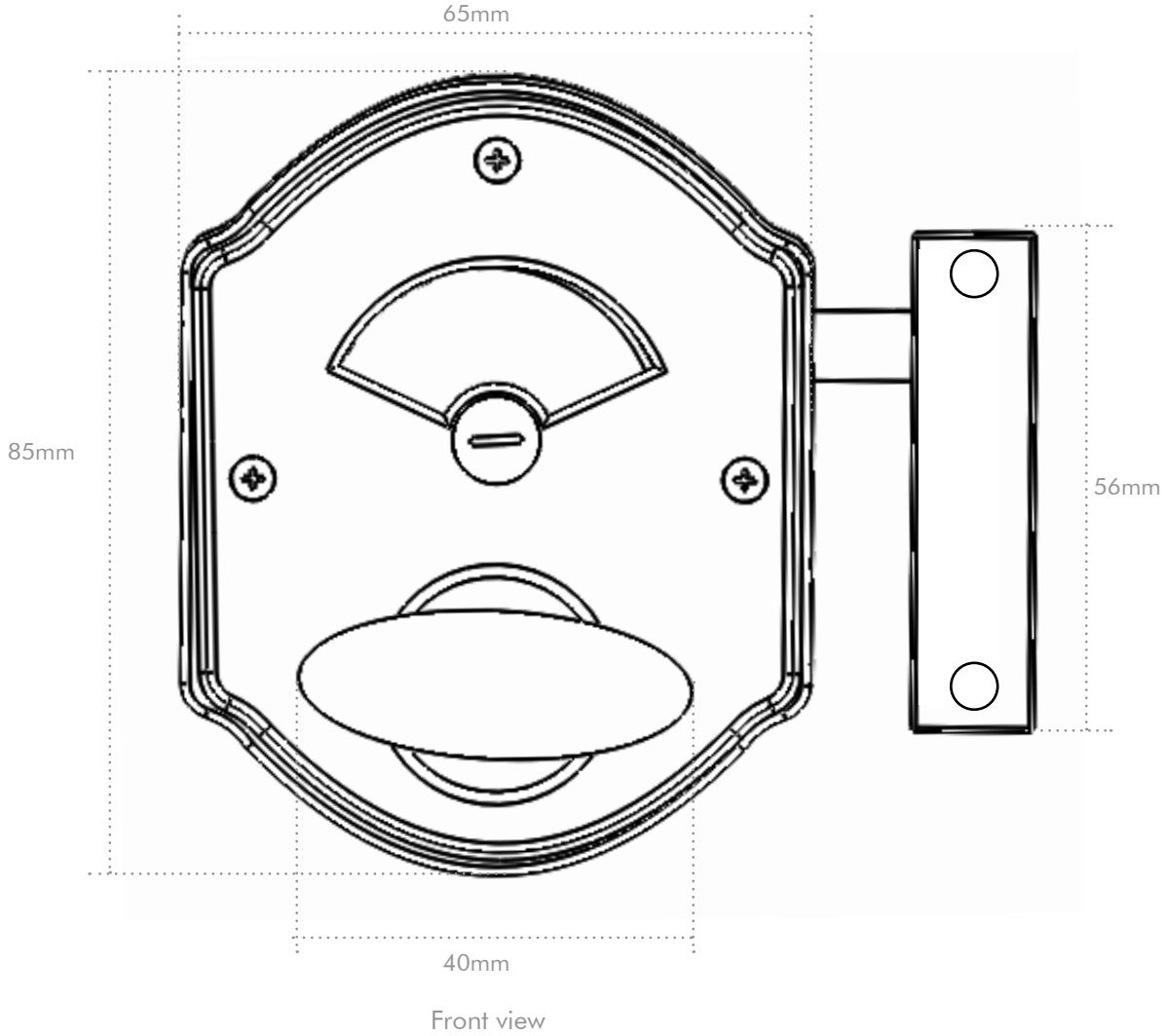
Back view

FINAL CONCEPT 2



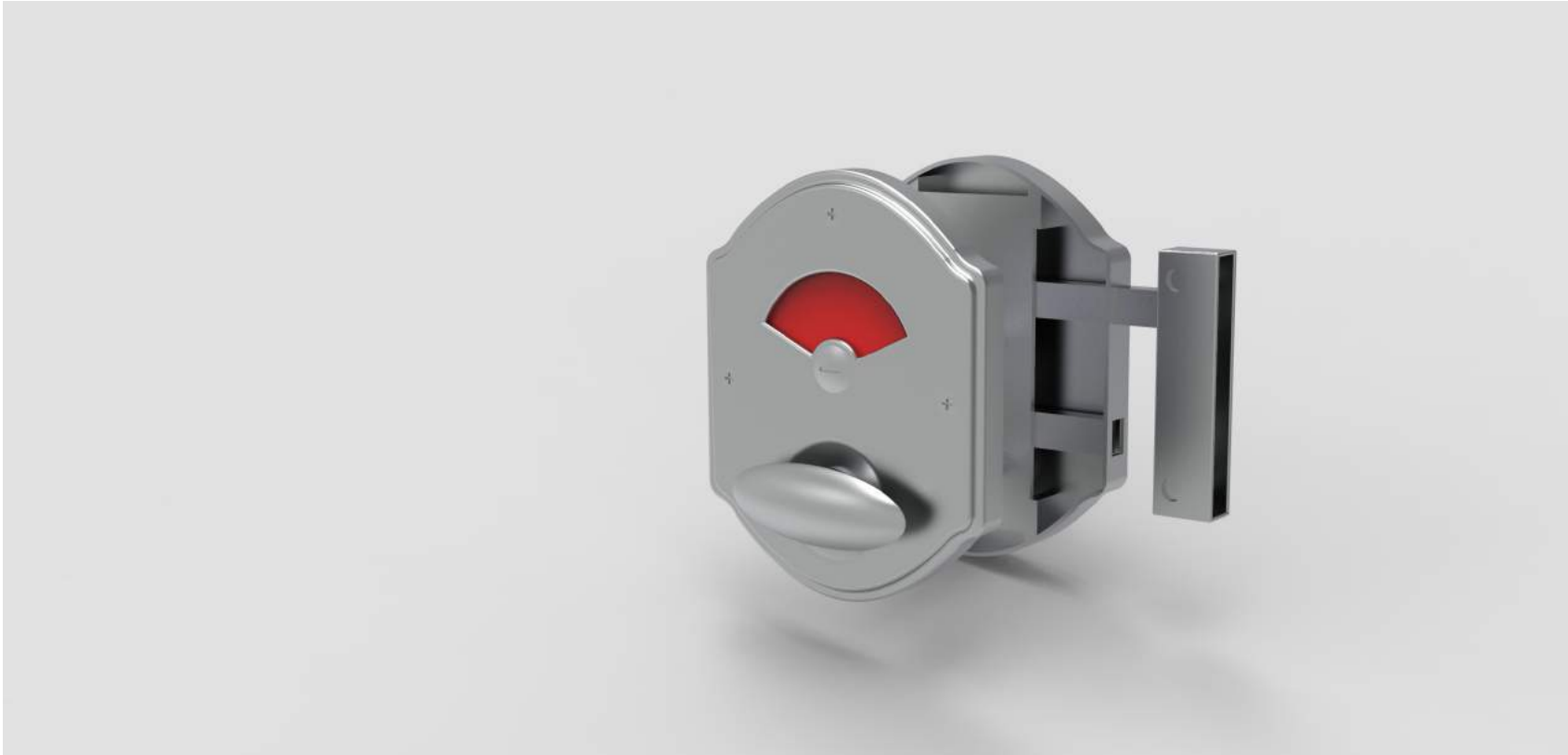
FINAL CONCEPT 2

Dimensions



FINAL CONCEPT 2

Render

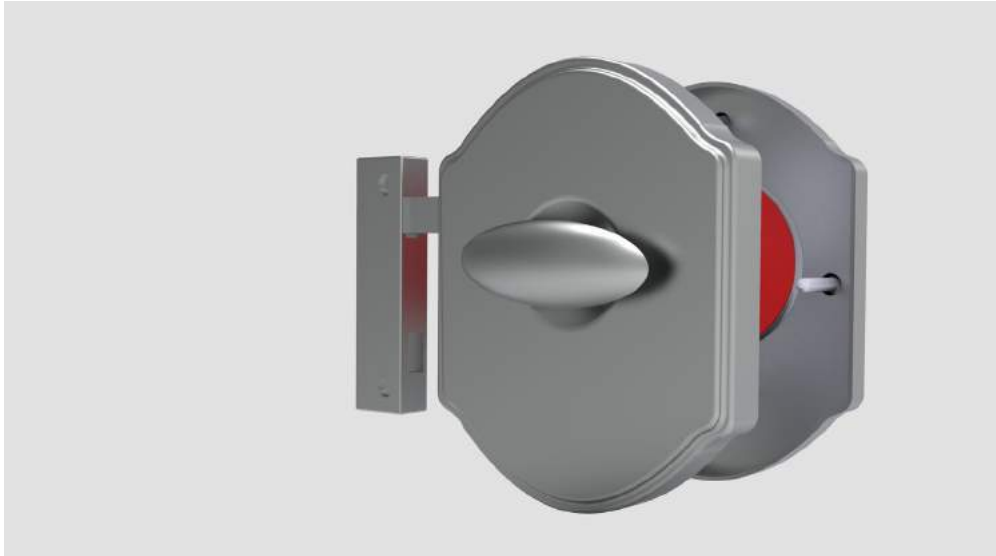


Material : Brass

Finish : Chrome rough finish

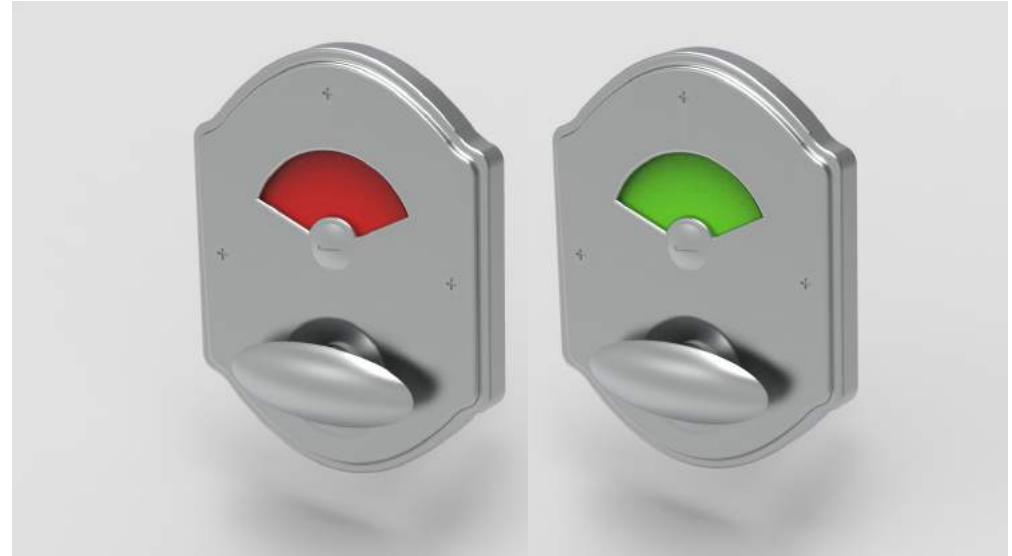
FINAL CONCEPT 2

Render



Back side

Locking from inside

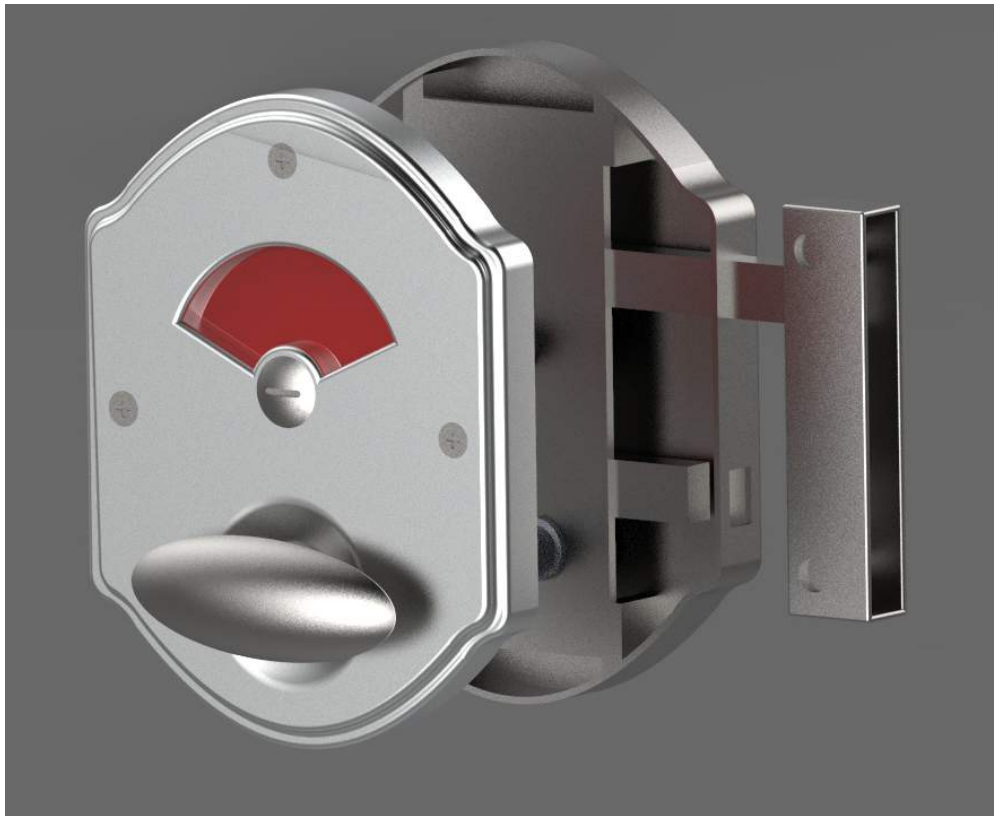


Front side

Display system

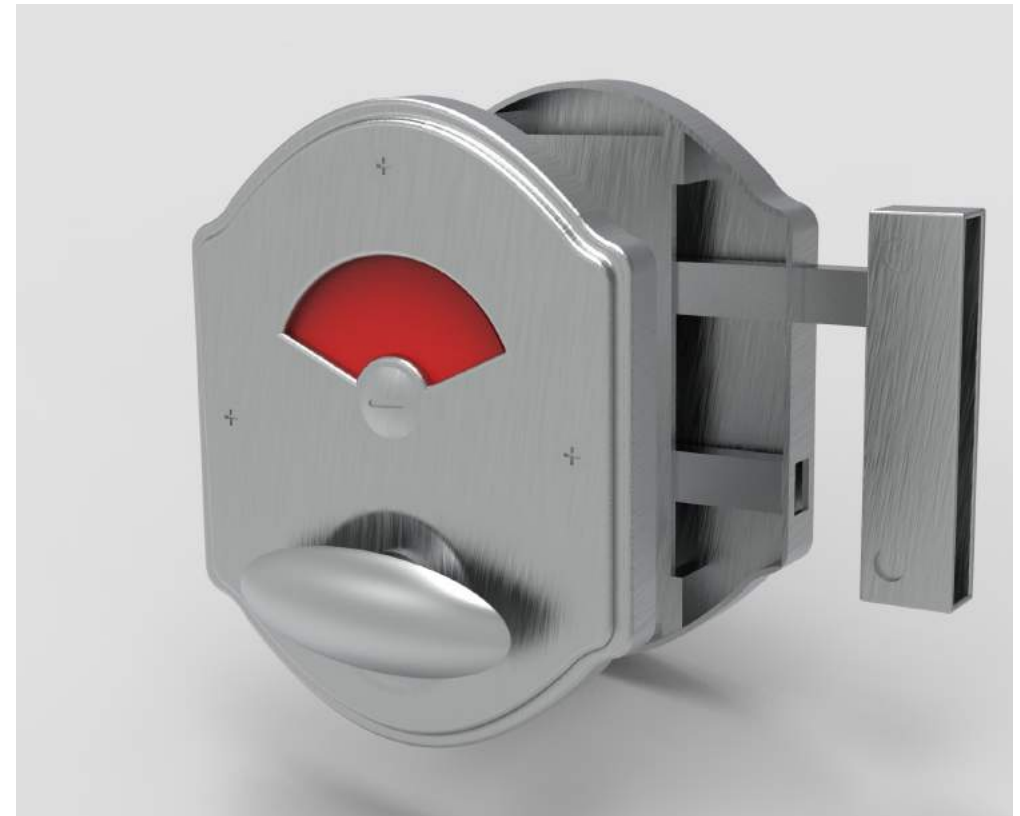
FINAL CONCEPT 2

Render



Brass body

Chrome gloss finish

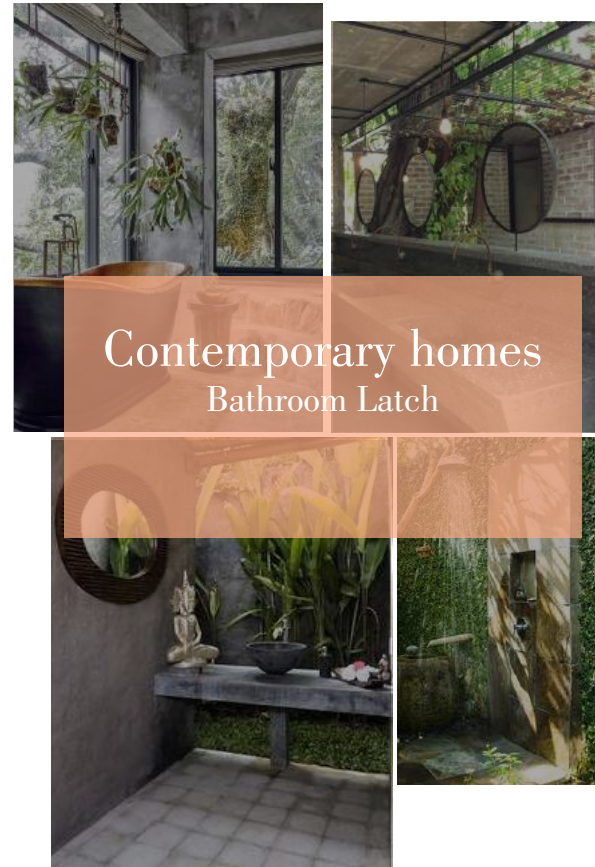


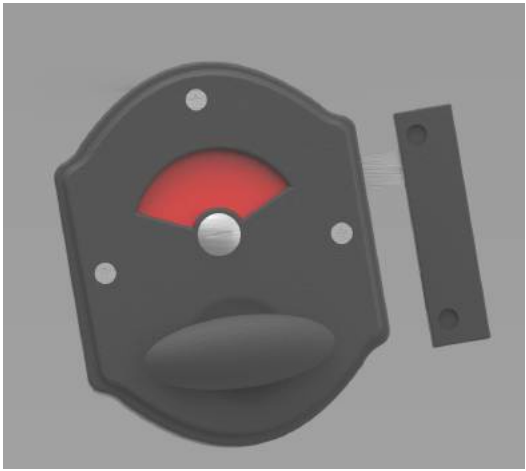
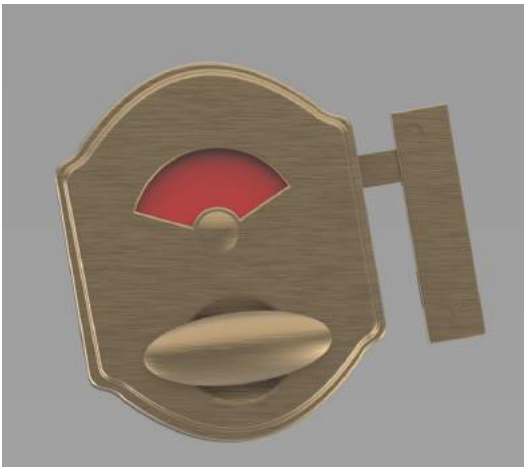
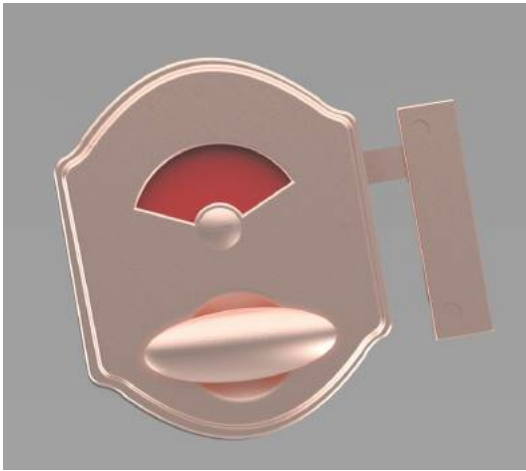
Brass body

Chrome brushed finish

FINAL CONCEPT 2

Environmental render





The end.