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**PREPARING FOR  
DISCOMFORT**



## **Encourage People To Participate In Physical Therapy**

Participating in physical therapy can help reduce pain and fatigue, making it easier to conserve energy.



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## **Suggest mind-body techniques**

Mind-body techniques, such as relaxation, meditation, and positive thinking, can help reduce the need for pain medication and increase energy levels.



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## **Use peer pressure**

Encouraging people to participate in group energy-saving activities.



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## **Suggest performing household tasks manually**

Performing household tasks manually, such as washing dishes by hand or hang-drying clothes.



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## Provide incentives

Providing incentives, such as rewards or recognition, can help motivate people to adopt energy-saving habits.



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## **Share results and benefits**

Regularly communicate the energy-saving achievements and associated cost reductions to occupants.



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## **Monitor and adjust**

Continuously monitor energy usage, comfort levels, and occupant feedback.



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## **Provide personal comfort solutions**

Offer suggestions and resources for occupants to improve personal comfort while minimizing energy consumption.



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## **Offer opt-out options**

Provide occupants with the opportunity to opt out of specific energy-saving measures if they have valid reasons or specific needs.



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## Engage occupants in decision-making

Involve occupants in the decision-making process by seeking their input and feedback.



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## **Enhance thermal comfort**

Implement measures to enhance thermal comfort even at slightly higher or lower temperatures.



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## **Set realistic expectations**

Clearly explain to occupants that there may be instances where certain comfort levels need to be compromised to achieve energy savings.



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## **Shoe**

Warm boots ,fabric made of  
wool.



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## **Headgear**

A piece of headgear, for example a cap, a beanie.



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## Coffee cup

A warm cup of coffee.



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## **Building** Insulation.



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## **Clothing**

Any piece of ordinary clothing, for example a sweater, a pair of trousers or a shirt.



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## Bike

Ride to warm up.



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## Sport equipment

Playing any kind of sports  
keeps body warm.



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## **Custom discomfort strategy**

Sketch or describe your new discomfort strategy here.



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## **Shower**

Cold shower help to keep warm.



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## **Make it personal:**

Providing personalized information and feedback can help motivate people to make changes.



**PREPARING FOR  
DISCOMFORT**



# IOT ANALYSIS



## **Temperature sensor**

Temperature of the object or the ambient in its surroundings.



**DATA CHANNELS**



IOT ANALYSIS



## **Humidity sensor**

Air humidity of the ambient where the object is placed.



**DATA CHANNELS**



# IOT ANALYSIS



## **Weight sensor**

Weight or change of weight of the object.



**DATA CHANNELS**



# IOT ANALYSIS



## **Water quality sensor**

Water quality of the environment where the object is placed.



**DATA CHANNELS**



# IOT ANALYSIS



## Air pollution sensor

Pollution of the air surrounding the object.



**DATA CHANNELS**



# IOT ANALYSIS



## **Moisture sensor**

Humidity and water contained in the soil where the object is placed.



**DATA CHANNELS**



# IOT ANALYSIS



## **Sound sensor**

Noise and sounds from the ambient surrounding the object in terms of energy conservation.



**DATA CHANNELS**



IOT ANALYSIS



## **Energy sensor**

Energy usage of the object.



**DATA CHANNELS**



# IOT ANALYSIS



## **Distance Sensor**

Distance measured from the object to an external obstacle.



**DATA CHANNELS**



# IOT ANALYSIS



## Pressure sensors

Pressure sensors measure changes in pressure or force and find applications in areas like industrial monitoring or weather forecasting.



**DATA CHANNELS**



# IOT ANALYSIS



## **Motion sensors**

Motion sensors, such as passive infrared (PIR) sensors or microwave sensors, detect motion by sensing changes in the environment.



**DATA CHANNELS**



# IOT ANALYSIS



## **Tangibles**

Heaters, thermostat.



**DATA CHANNELS**



# IOT ANALYSIS



## **Light sensors**

Light sensors, such as photodiodes or ambient light sensors, measure light intensity or detect changes in ambient light conditions.



**DATA CHANNELS**



IOT ANALYSIS



## **Gas and air quality sensors**

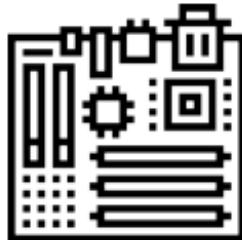
Gas sensors and air quality sensors, including carbon monoxide (CO) sensors or volatile organic compound (VOC) sensors.



**DATA CHANNELS**



# IOT ANALYSIS



## Accelerometers

Accelerometers measure changes in acceleration, tilt, or vibration.



**DATA CHANNELS**



# IOT ANALYSIS



## Proximity Sensors

Proximity sensors, like infrared (IR) sensors or ultrasonic sensors, are designed to detect the presence or absence of objects in their proximity.



**DATA CHANNELS**



# IOT ANALYSIS



## **Environmental sensors**

Environmental sensors, such as temperature sensors or humidity sensors, typically have low power requirements.



**DATA CHANNELS**



# IOT ANALYSIS



## **Location sensor**

Latitude and longitude  
coordinates of the object.



**DATA CHANNELS**



# IOT ANALYSIS



## **Passive sensors**

Passive sensors do not require a power source and rely on external factors such as light, heat, or motion to generate a response.





IOT ANALYSIS



## Meter interfaces

Meter interfaces with wireless communication capabilities can be used to provide third-party meters with wireless communication capabilities.



**DATA CHANNELS**



# IOT ANALYSIS



## Custom data channels

Sketch or describe your new data channels here.





## DATA CHANNELS



## Email

A service that allows to send and receive emails eg power usage is above certain level so message should be received.



**DATA CHANNELS**



## DATA CHANNELS



## **Bank account**

A service allowing to update or retrieve data from an online banking account e.g. energy expenditure.



**DATA CHANNELS**



## DATA CHANNELS



## Social media

A service connecting to social media accounts to retrieve or post data.



**DATA CHANNELS**



## DATA CHANNELS



## **Cloud Storage**

A database or generic online document-based storage service.



**DATA CHANNELS**



## DATA CHANNELS



## Weather

Data from a weather forecast service, for example temperature, rain probability, UV index, etc.



**DATA CHANNELS**



## DATA CHANNELS



## Smart home

A service allowing to retrieve sensor data and control the components of a smart home.  
Eg. smart thermostat.



**DATA CHANNELS**



## DATA CHANNELS



## **Health and fitness**

A service providing access to health and fitness data of the user.



**DATA CHANNELS**



## DATA CHANNELS



## **Instant messaging:**

SMS or other instant messaging services.



**DATA CHANNELS**



## DATA CHANNELS



## **Text**

The object displays a short text message to the user.



**DATA CHANNELS**



## DATA CHANNELS



## **Emoji**

the object displays some kind of emotional response.



**DATA CHANNELS**



## DATA CHANNELS



## **Calendar and time**

A service connecting to your calendar, allowing to schedule appointments or check availability. Eg setting alarms and dates for controlling thermostat.



**DATA CHANNELS**



## DATA CHANNELS



## Blink

A point of light on the object starts blinking.



**DATA CHANNELS**



## DATA CHANNELS



## **Shapeshift**

The object changes its shape in some way.



**DATA CHANNELS**



## DATA CHANNELS



## Motion

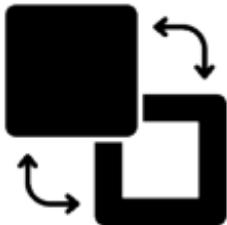
The object moves in response to a trigger.



**DATA CHANNELS**



## DATA CHANNELS



## Colour change

A light on the object changes or fades from one colour to another.



**DATA CHANNELS**



## DATA CHANNELS



## Sound

The object emits a sound.



**DATA CHANNELS**



## DATA CHANNELS



## Vibrate

The object starts vibrating.



**DATA CHANNELS**



## DATA CHANNELS

## **Custom data channels**

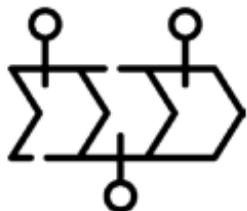
Sketch or describe your new data channels here.



**DATA CHANNELS**



## DATA CHANNELS



## Timeline

The object provides a visualization of data over time.



**DATA CHANNELS**



## DATA CHANNELS



## News

To know updates from other communal network.



**DATA CHANNELS**



**HUMAN ACTIONS**



## **Shake**

The user shakes the object to see the change in energy usage.



**HUMAN ACTIONS**



**HUMAN ACTIONS**



## **Efficient appliance use**

Using them in an efficient manner.



**HUMAN ACTIONS**



**HUMAN ACTIONS**



## **Insulation and weatherization**

By preventing heat loss during winters and heat gain during summers.



**HUMAN ACTIONS**



**HUMAN ACTIONS**



## **Efficient lighting practices**

Replacing traditional incandescent bulbs with energy-efficient alternatives.



**HUMAN ACTIONS**



**HUMAN ACTIONS**



## Smart thermostat usage

Utilizing programmable or smart thermostats.



**HUMAN ACTIONS**



**HUMAN ACTIONS**



## **Renewable energy adoption**

Investing in renewable energy sources like solar panels or wind turbines.



**HUMAN ACTIONS**



**HUMAN ACTIONS**



## **Behavioural changes**

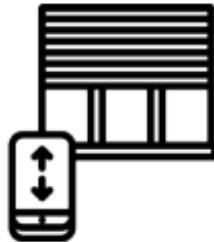
Adopting energy-conscious behaviours.



**HUMAN ACTIONS**



**HUMAN ACTIONS**



## **Regular maintenance**

Ensuring regular maintenance  
of HVAC systems.



**HUMAN ACTIONS**



**HUMAN ACTIONS**



## **Education and awareness:**

Educating oneself and others  
about energy-efficient  
practices.



**HUMAN ACTIONS**



**HUMAN ACTIONS**



## **Decorate with lighter colors**

Lighter colors reflect light and can help reduce the need for artificial lighting.



**HUMAN ACTIONS**



**HUMAN ACTIONS**



## **Identify and unplug energy vampires**

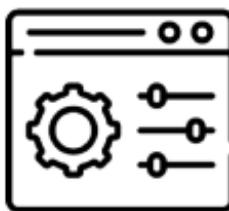
Energy vampires are devices that continue to draw power even when they are turned off.



**HUMAN ACTIONS**



**HUMAN ACTIONS**



## **Ensure your home is properly insulated**

Proper insulation can help keep your home warm in the winter and cool in the summer.



**HUMAN ACTIONS**



**HUMAN ACTIONS**



## **Plant trees and use natural shade**

Strategically plant trees and use natural shade to reduce direct sunlight on your home.



**HUMAN ACTIONS**



**HUMAN ACTIONS**



## **Optimize water usage**

Reduce hot water usage by taking shorter showers.



**HUMAN ACTIONS**



**HUMAN ACTIONS**



## **Use energy-saving settings**

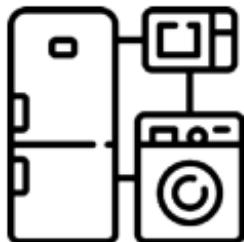
Use sleep mode or power-saving features to reduce standby power consumption.



**HUMAN ACTIONS**



**HUMAN ACTIONS**



## **Opt for energy-efficient appliances**

Look for appliances with high  
energy efficiency ratings.



**HUMAN ACTIONS**



**HUMAN ACTIONS**



## **Seal air leaks**

Inspect doors, windows, and other areas for air leaks and seal them with weather stripping or caulking.



**HUMAN ACTIONS**



**HUMAN ACTIONS**

## **Custom human actions**

Sketch or describe your new actions here.



**HUMAN ACTIONS**



**HUMAN ACTIONS**



## Adjust thermostat settings

Set your thermostat to an energy-efficient temperature.



**HUMAN ACTIONS**



**HUMAN ACTIONS**



## **Use Natural Lighting**

Take advantage of natural light during the day by opening curtains or blinds.



**HUMAN ACTIONS**



**HUMAN ACTIONS**



## Location change

The user moves the object to a specific location, or away from it.



**HUMAN ACTIONS**



**HUMAN ACTIONS**



## **Energy conservation:**

By turning off lights and  
appliances when not in use.



**HUMAN ACTIONS**



## USE CASES



## **Energy conservation**

Turning off lights and electronics when not in use, using energy-efficient appliances, and unplugging chargers when not in use.



**USE CASES**



## USE CASES



## **Lighting efficiency**

Opening curtains and blinds during the day and using task lighting for specific tasks, replacing incandescent bulbs with LED or CFL bulbs.



**USE CASES**



## USE CASES



## TEmperature Control

Set thermostats at a reasonable temperature, to dress appropriately for the weather.



**USE CASES**



## USE CASES



## HVAC Optimization

Work with building management to optimize the heating, ventilation, and air conditioning systems.



**USE CASES**



## USE CASES



## Smart Technology

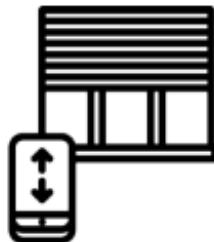
Smart thermostats, smart plugs, and other IoT devices to monitor and control energy usage in real-time.



**USE CASES**



## USE CASES



## **Daylight harvesting**

automatic shading and  
dimmable lighting controls.



**USE CASES**



## USE CASES



## **Behavioural Changes**

Using stairs instead of elevators.



**USE CASES**



## USE CASES



## **Building retrofits**

Retrofitting the building envelope and mechanical systems, such as upgrading windows and insulation.



**USE CASES**



## USE CASES



## **Occupancy sensors**

Installing occupancy sensors in common areas, such as conference rooms, restrooms, and corridors.



**USE CASES**



## USE CASES



## **Energy Dashboards**

This can help to educate and engage occupants in energy conservation efforts by showing them the direct impact of their actions on energy consumption.



**USE CASES**



## USE CASES



## **Biophilic design**

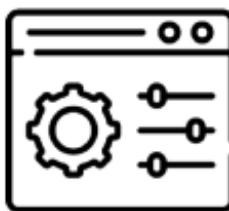
such as plants, natural light, and views of nature.



**USE CASES**



## USE CASES



## **Dynamic Glazing**

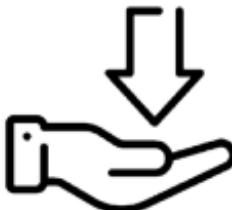
control the amount of light and heat entering a building.



**USE CASES**



## USE CASES



## Demand response

By adjusting energy usage  
during high-demand periods.



**USE CASES**

Lorem ipsum



## USE CASES



## **Energy monitoring and management:**

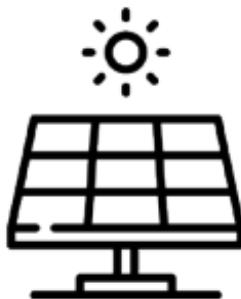
By identifying energy inefficiencies and making informed decisions based on the data, users can optimize their energy usage, reduce waste.



**USE CASES**



## USE CASES



## **Distributed energy resources (ders)**

Implementing smart grids that integrate distributed energy resources, such as solar panels, wind turbines, and energy storage systems.



**USE CASES**



## USE CASES



## **Microgrids and peer-to-peer energy trading:peer-to-peer**

Energy trading platforms based on blockchain technology can enable direct energy transactions between participants.



**USE CASES**



## USE CASES



## **Time-of-use pricing**

Consumers can take advantage of lower rates during off-peak hours.



**USE CASES**



## USE CASES



## **Energy storage optimization**

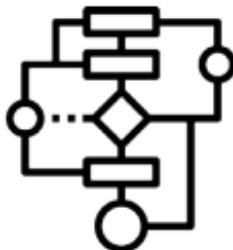
By intelligently managing the charging and discharging of energy storage, excess energy can be stored during low-cost periods and utilized during high-cost periods.



**USE CASES**



## USE CASES



## Predictive analytics and maintenance

By utilizing data analytics and machine learning algorithms, smart technologies can predict equipment failures, optimize maintenance schedules, and minimize downtime.



**USE CASES**



## USE CASES

## **CUSTOM USE CASES**

Sketch or describe your new use cases here.



**USE CASES**