



POLITECNICO
MILANO 1863



ADVANCED USER INTERFACES

Academic Year 2022-2023



Green Home - Team A

Who we are?



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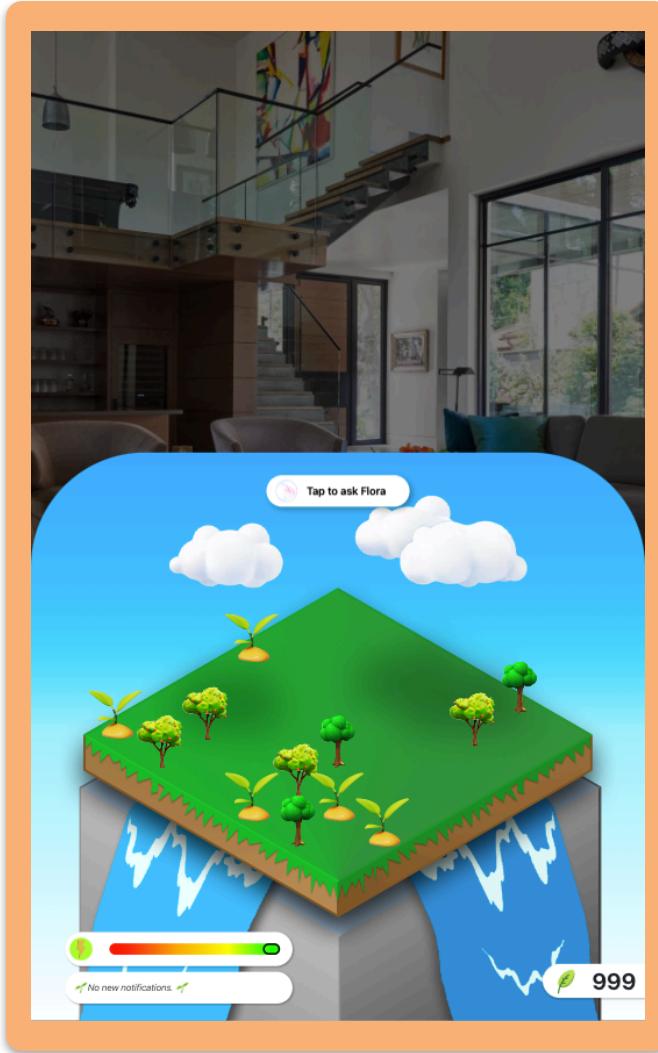


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Introduction



Promotional Video



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Scenario - User Profile

- Little families, couples or single (18-30 years)
 - Final users of the mirror
- Energy provider
 - Interested in data gathering



Scenario - Main Needs

- Save Money
 - Reduce the cost of the bills
 - Get tips for a smarter behavior
- Be entertained
 - Play the game
- Own a useful and trendy piece of furniture at the same time



Scenario - Main Goals



Through gamification, visual and audio experience

- Make the user enjoy interacting with the smart mirror
- Provide useful feedbacks
 - Give suggestions about households appliances
 - Induce to a conscious consumption
- Show energy consumption
- Make the user aware of environmental issues



Software Tools



MagicMirror²

The open source modular smart mirror platform.



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Hardware

- MagicMirror²
 - Microphone
 - Speaker
- Home requirements
 - Photovoltaic panels
 - Batteries



Smart Home API

Simulated House

- Photovoltaic panels (18 panels, 0.35 kWh each)
- Batteries (capacity of 10 kWh)
- Appliances

Appliance	Consumption
Air conditioner	3.00kWh
Dehumidifier	0.07kWh
Cooker	1.04kWh
Dishwasher	1.20kWh
Dryer	3.50kWh
Boiler	24.00kWh
Oven	2.30kWh
Washing machine	1.30kWh

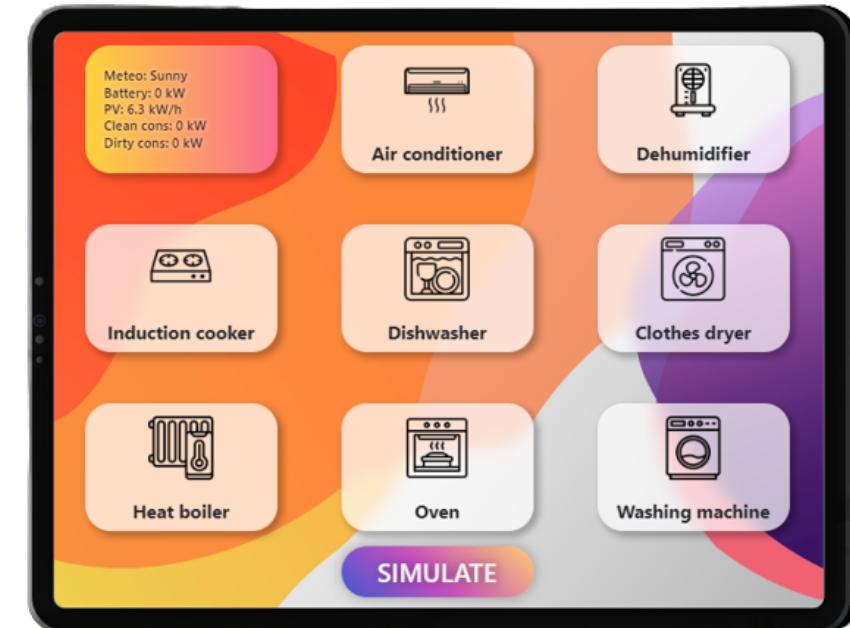


Smart Home API

- Get house/appliances data
- Turn on/off appliances
- Get status of the battery and energy converted
- Change the weather
- Simulate one hour
- Compute clean energy and dirty energy

$$CurrentGrade = \frac{clean_{energy}}{clean_{energy} + dirty_{energy}}$$

$$TotalGrade = \frac{1}{N} \sum_{i=0}^N CurrentGrade_i$$



Front-end

Touch Screen

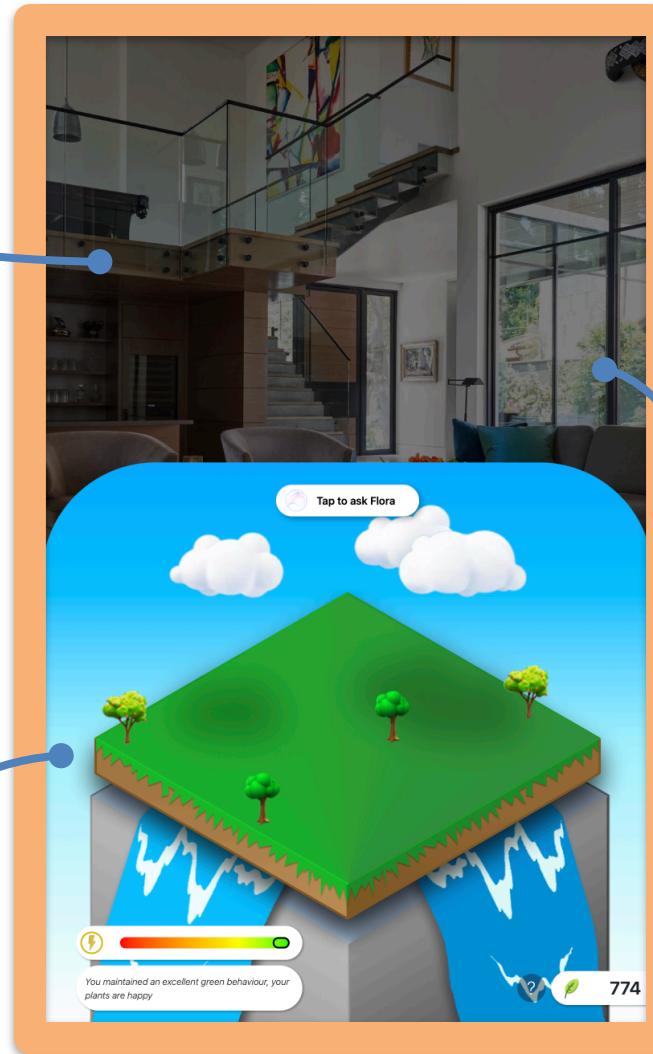


Simple but involving game

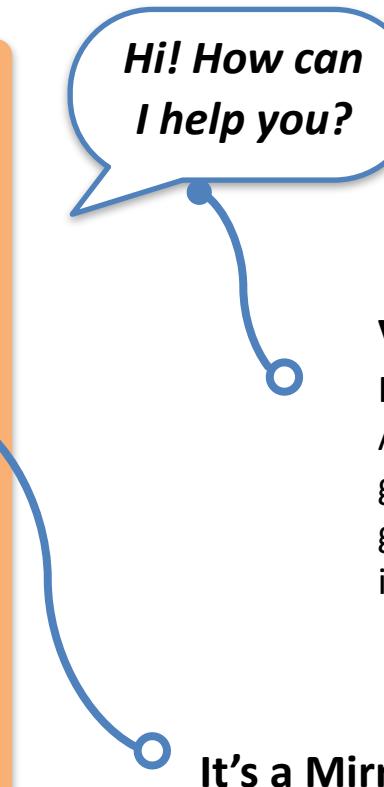
User's strategy affects game rewards

Smart Forest

Trees are one of the most important element of the ecosystem



*Hi! How can
I help you?*



Vocal interaction

Flora is the Conversational Agent of the mirror, it will guide the user through the game giving him tips and info

It's a Mirror!



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Future improvements



- ChatGPT
- Turn on-Turn off consumptions automatizations
- Voice activation for Flora
- Use the real Edison's API



Value proposition

It allows you to visualize and understand the energy consumptions of your home with a unique piece of furniture and to mirror yourself in a virtual world that depends on your everyday actions.





Thank you for your attention



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SMART
FOREST

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