



# Smart window

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# Agenda

**About us**

**Background**

**Problems**

**Solution**

**Project Principles**

**Additions**

**Future Plans**

**Q & A**



We are awesome!

The logo for 'iRNERO' features a stylized lowercase 'i' with a white dot, followed by the uppercase letters 'RNERO' in a bold, white, sans-serif font. The 'i' is partially overlaid by an orange diamond shape.



**George Tabunidze**



**Warte, was?**

**Smart window?**



Our smart window is capable of self cleaning the glass, filtering and ventilating the room air without losing the inside temperature

# A Big Problem for skyscrapers

Smart window idea was born to avoid deadly accidents during skyscraper window washing. Just to remind you In a 15 year old period tracked by OSHA(Occupation Safety and Health Administration) **60% of window washing accidents were resulted in fatalities**



Wer braucht das?

And,  
On top of that, it costs a lot!



### Langweilige Stat...

Skyscraper window washers take approximately \$250 – \$450 per hour. And on average if weather is good, it takes a month to clean the Hearst Tower from the bottom to the top

But,  
What is our solution?

Automated  
cleaning using  
window  
detergents

Reduced  
cleaning time.  
Around 2  
minutes.

Reduced costs.  
Less than a  
dollar per  
process.

So,  
How it is done?

Detergent  
pours on  
the glass

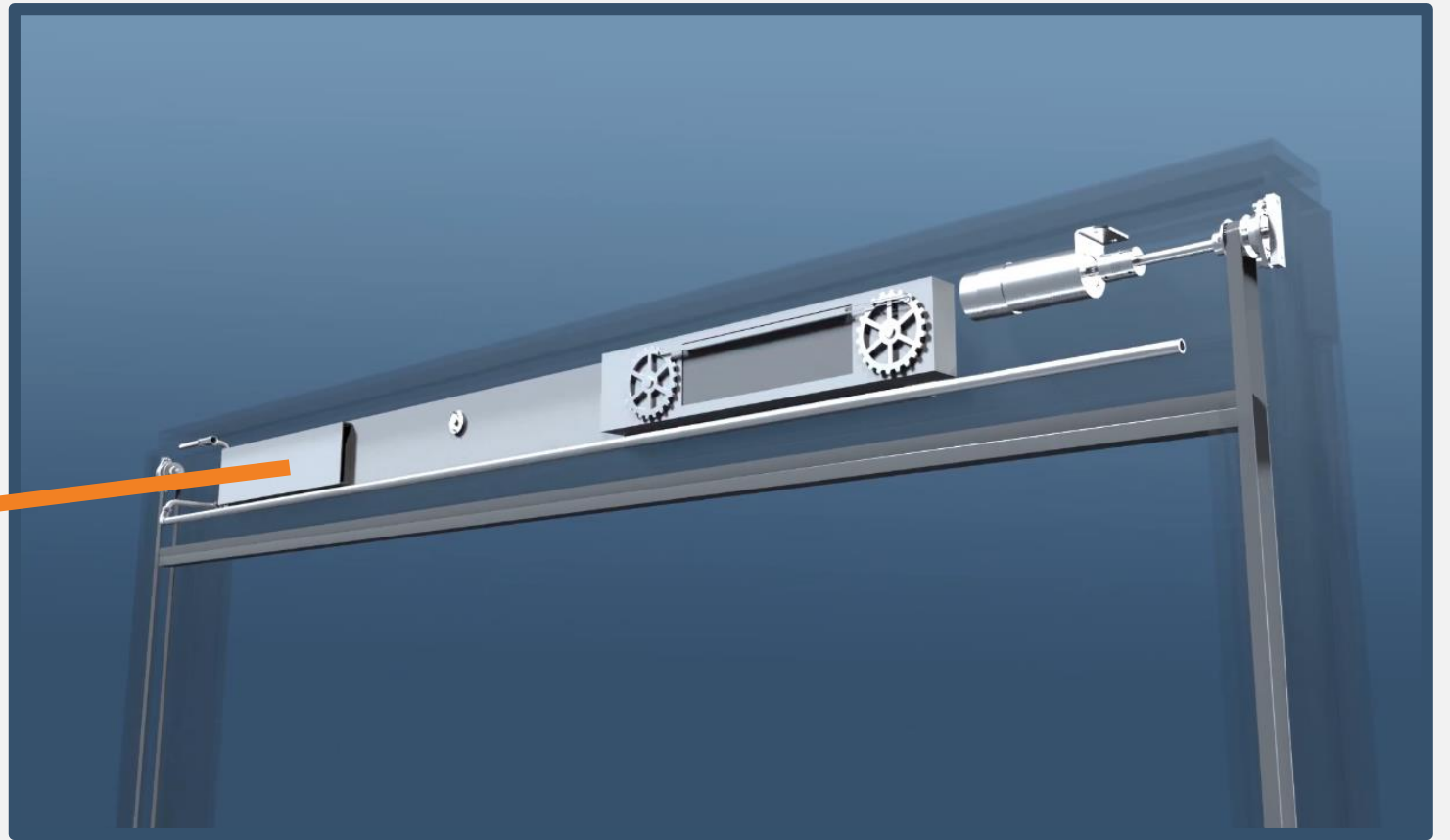
Motor  
activates  
the  
cleaner



**So einfach..**



# Ventilation



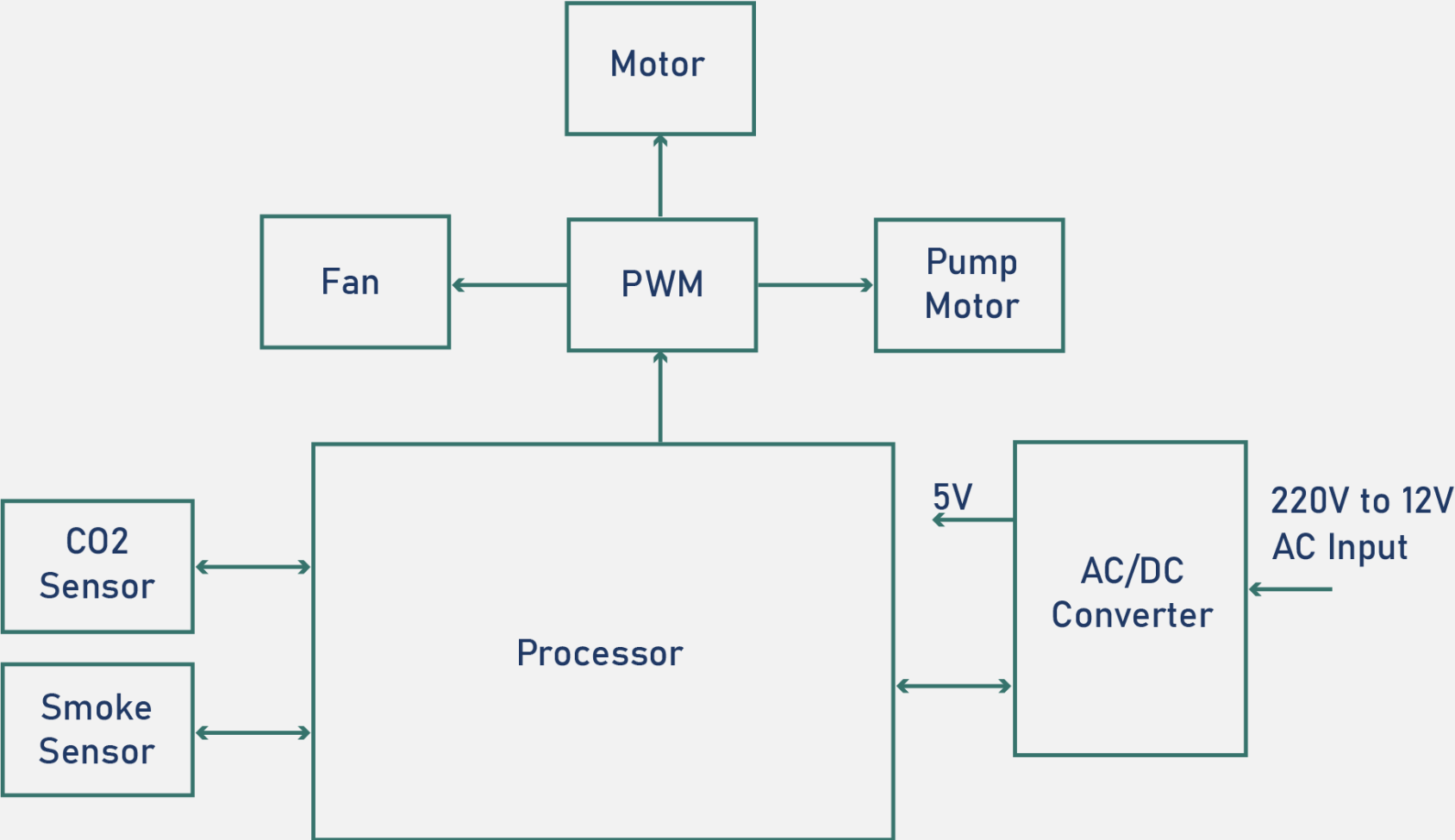
CO2  
Sensor

Smoke  
Sensor

Hepa  
Filter

Recuper  
ator

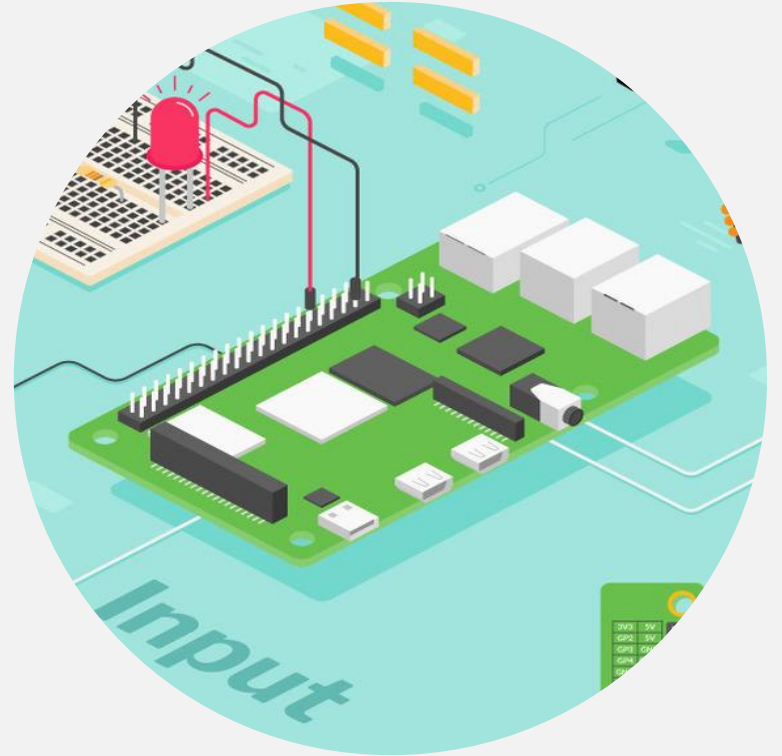
# Block scheme of the system



# Raspberry Pi, The brain and much more..

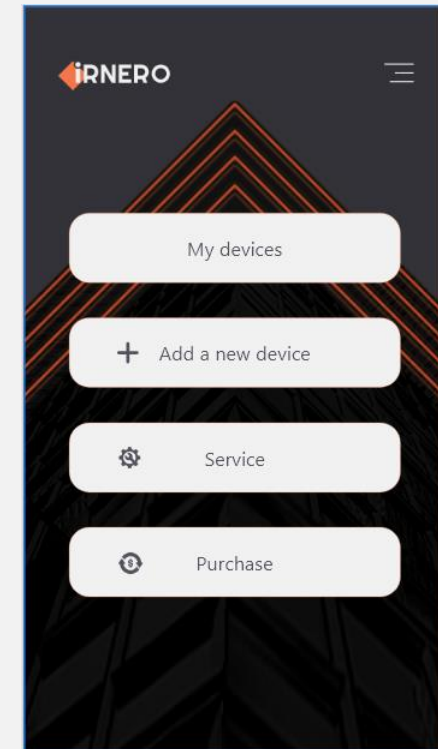
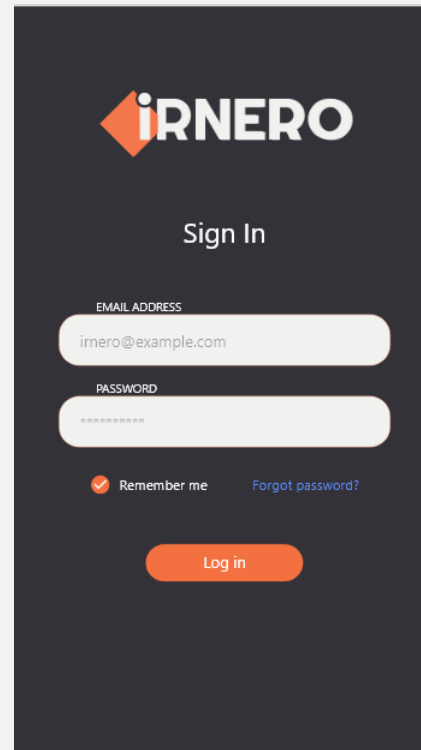
## Warum Raspberry?!

I chose Raspberry Pi, because it gives me the possibility to control more than one window at the same time and serve it as communication hub. On top of that I can add as many features as I want without losing the performance.



That's it?

On top of that I have designed an Android application. You can operate your Smart window from anywhere!



Infos...

The whole front-end and some of the back-end was done by me.

NEIN!...



It's not all!

Winner of the GITA'S MATCHING GRANTS PROGRAM.

Ach so...

100 000 ₾ is Approximately \$30K

GITA stands for Georgia's Innovation and Technology Agency



Future plans

**Bigger tank for window detergent**

**Built in security system**

**Built in Ozone disinfectant**



After working for the project...

**Learnt Raspberry Pi programming**

**Learnt working with analog and digital sensors**

**Learnt Python and Java**

**Learnt Mobile app Front-end and back-end**

**Learnt to design Small mechanical devices**

Thanks for attention!

Fragen?