

S.E.B.

Smart Environment Bot

Mobile and cyber-physical systems

Alessandro Rístorí Níko Dalla Noce



PROBLEM

PROBLEM TO SOLVE



The current HACCP regulations impose on every retailer the obligation to keep an updated daily register of temperatures for cold rooms that store foodstuffs.



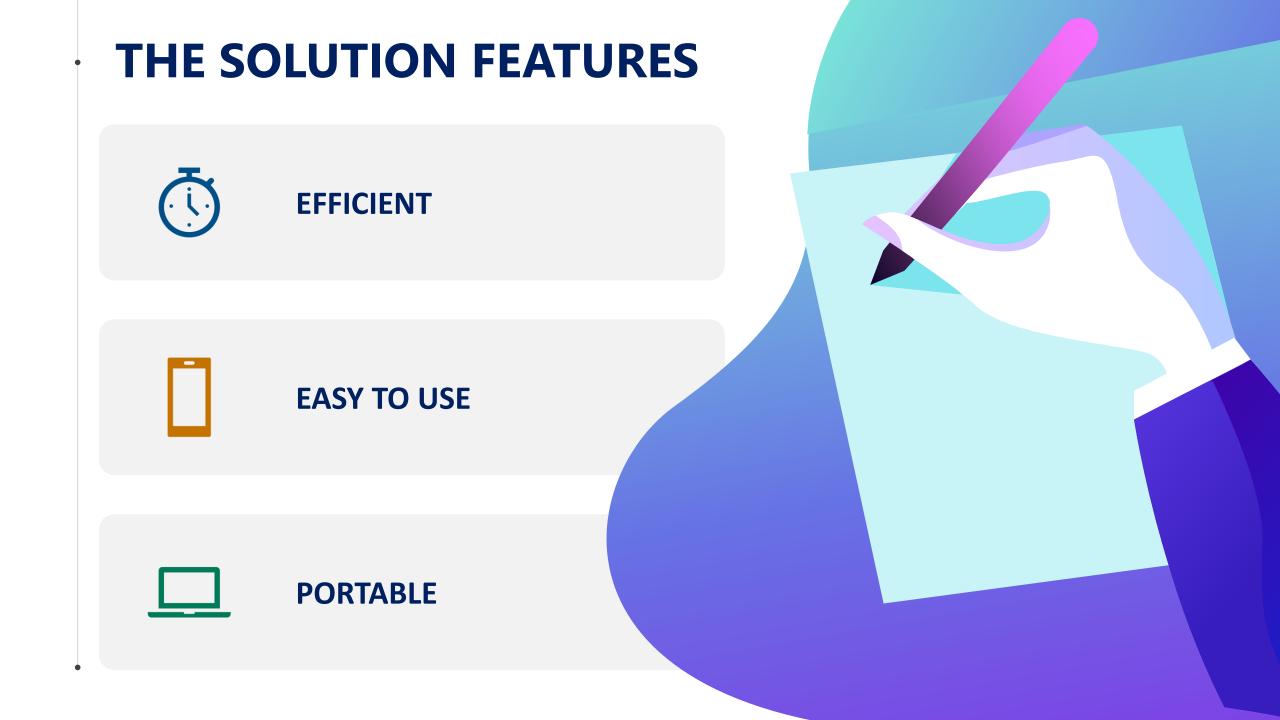
The non-compliance of that rule leads to a considerable fine.



Moreover, what if a cold room stops working?

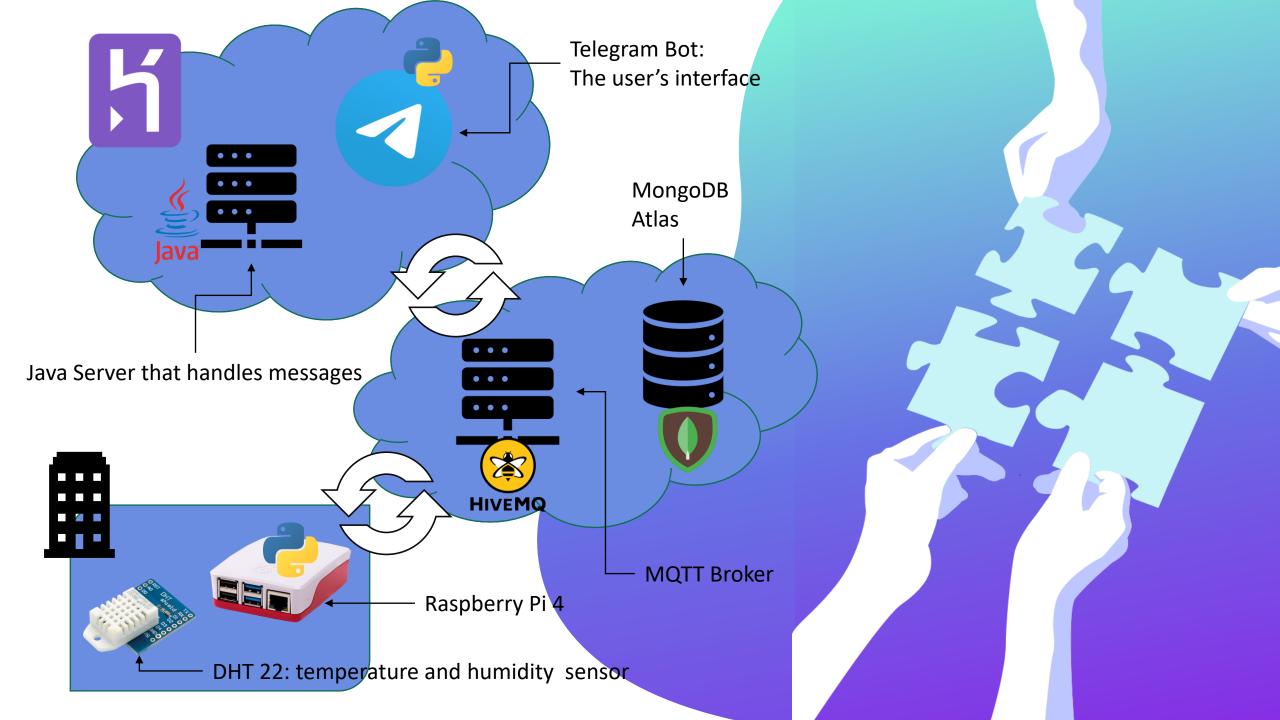


SOLUTION





ARCHITECTURE





FUNCTIONING

HOW DOES IT WORK?



A customer owns many Raspberry and sensors:

 Each sensor publishes and subscribes a topic.



The server receives data from the broker:

- Stores them in the DB;
- Eventually sends an alert.



The Telegram bot:

 provides, through commands, the data concerning the relevations provided by the sensors.



WHAT ABOUT ENERGY EFFICIENCY?

 Raspberry OS doesn't support suspension or hibernation mode;



 The only way to save energy is to let the sensor sleep after it sends the relevation or...

 Use more appropriate type of devices that can minimize the duty cycle



USER'S SIDE: TELEGRAM BOT



TempBot

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/help

Utils:

/help - Shows a list of all possible commands

/user - Shows informations about you

/topics **topic** - Shows every topic you're subscribed to (if no argument is passed)

Modify Parameters

/changeoffset **topic offset** - Changes the smapling interval of the desired topic (you're subscribed to)

/changetrigger topic trigger - Changes the trigger condition of the desired topic (you're subscribed to)

/setalert **topic offset** - Changes the alert offset of the desired topic (you're subscribed to)

Return Records

/avgtemp topic year-month-day - Gives the average temperature of the current day if no argument is passed

/avghum topic year-month-day - Gives the average humidity of the current day if no argument is passed

/lasttemp topic year-month-day - Returns the last recorded temperature of the current day if no argument is passed

/lasthum topic year-month-day - Returns the last recorded humidity of the current day if no argument is passed





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/lasttemp Azienda1/frigo 2021-05-08



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/lasttemp Azienda1/frigo 2021-05-08

Last recorded temperature for 2021-05-08:

21.5, recorded at 2021-05-08 20:55:09



TempBot

ATTENTION: Topic Azienda1/frigo with value: 21.50 exceeds the

threshold: 21.00



DEMO

WHAT WE WILL SHOW



A common use case



An alert



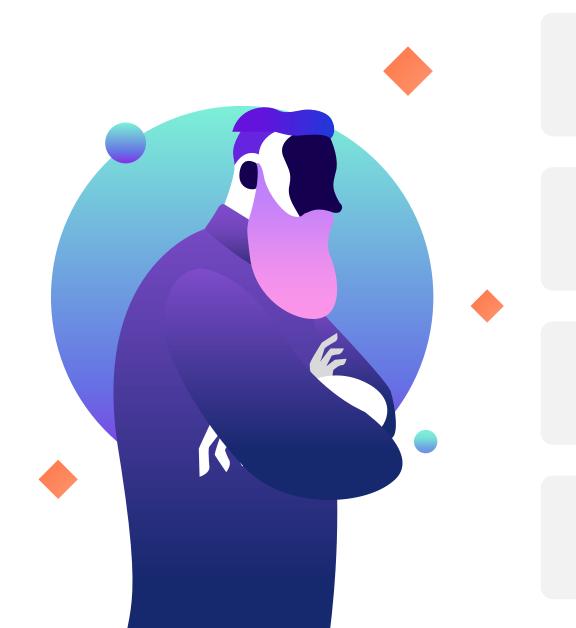
Some customization by the user





FUTURE WORK

WE CAN DO BETTER





Expanding our customer range;



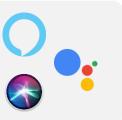
App for a better management;



Multiple field of use, from home to business;



Virtual assistant integration.





QUESTIONS??

Are you curious about how we implemented this project?

nikodallanoce/MCPS (github.com)
nikodallanoce/MQTTServer (github.com)
RistoAle97/BotTelegramMCPS (github.com)



Grazie 🖐