English version

ROBONOMICS.NETWORK • BOOK №6 • 2023-2024 •

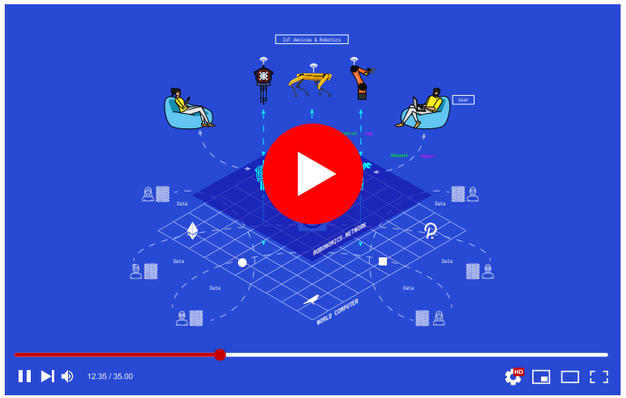
ROBONOMICS

R&D 2023

WHAT IS ROBONOMICS

Robonomics is an open-source platform for IoT applications which enables the exchange of technical and economic information in the form of atomic transactions between user applications, IoT services, and complex robotics.

Based on the achievements of cloud platforms, Robonomics aims to offer the IoT market safer and more advanced internet solutions at every stage of human-machine communication.



What is Robonomics
Youtube Video

ROBONOMICS OBJECTIVES

1. IoT device management with a decentralized cloud

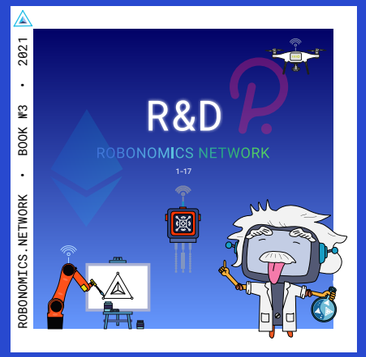
Blockchain networks have all the capabilities to provide the highest degree of security for running a device and fetching it's data. The interaction with the device can actually be described by changing the state of the digital twin stored in the blockchain network and sending information about these changes. In the case of a permissionless blockchain, we can talk about the guarantee of global availability of providers for IoT, additionally, it ensures high level security for digital twin data preventing unauthorized modifications.

2. Techno-economic transactions between humans and machines

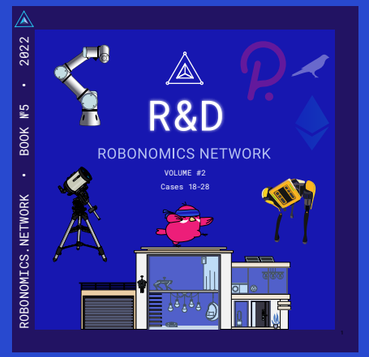
Thanks to the mechanism of cryptocurrencies and smart contracts, we can provide direct access to automated systems on digital markets. For example, Ethereum already implements most of the basic tools of economic activity that can be used in the operations of autonomous devices. The applications created for the interaction between the end user and the IoT device will be much more effective if the terms of service and payment for it are inseparable from the launch parameters of the device.

3. Serverless IoT applications for users

Modern developments in web3-technology can solve the issue of user privacy. With web3 there is no need to authenticate and doesn't require connections to specific servers for fetching and accessing data or controlling the device.



1-17 use cases based on web3 technologies.
Book 2021 >>



18-28 use cases based on web3 technologies.
Book 2022 >>

SOVEREIGN SMART HOME

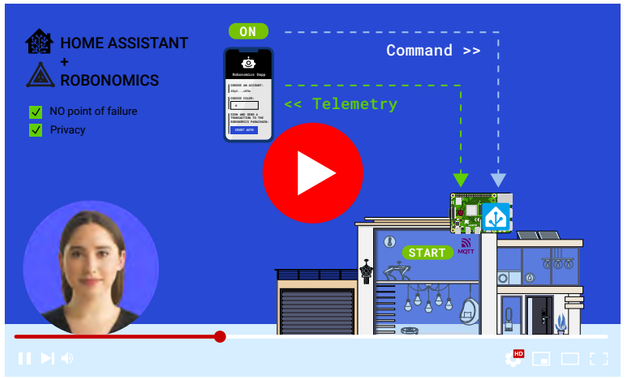
The modern IoT market provides the average user a large selection of smart home solutions, but they are all tied to centralized cloud providers or require an expensive proprietary gateway for connecting devices. As a result, you as a user always depend on the hardware and infrastructure vendor to run your smart system.

We see two main problems with this smart solution:

1) You have no control over what data you share with the vendor or third party.

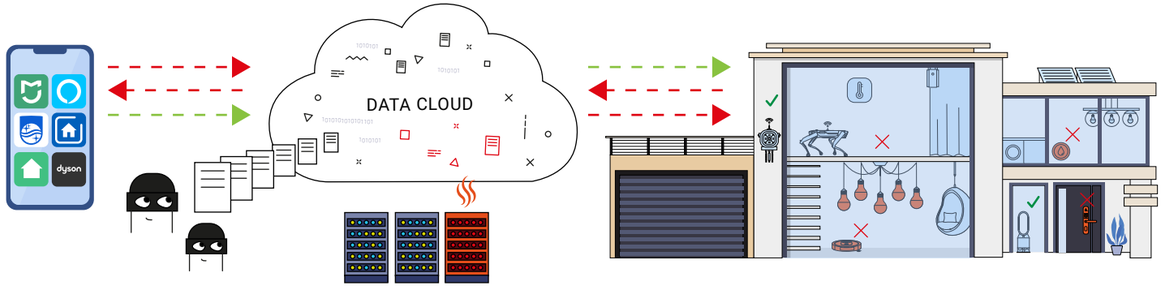
2) Your smart home is vulnerable to shutdowns of centralized cloud servers.

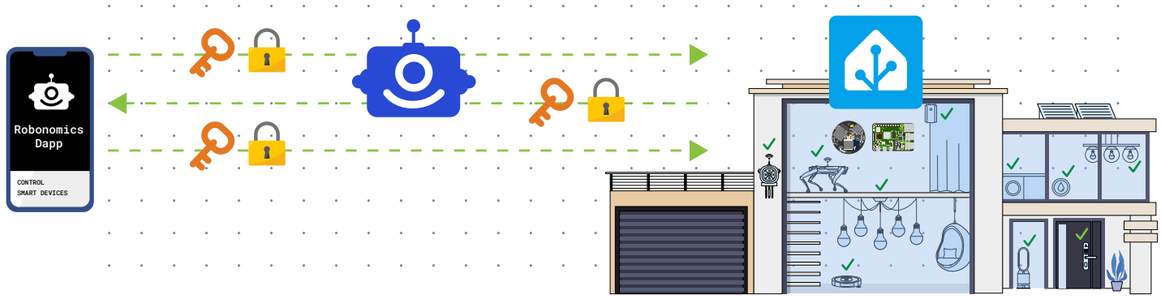
At the dawn of the development of smart homes, it was difficult to imagine a situation where the average user could easily deploy their own local home automation system. But now, thanks to widespread IoT standards, cheap hardware and open-source home automation systems, this vision has become affordable. And thanks to the use of a decentralized cloud based on web3 technologies, it is now possible to provide secure remote access to smart devices



A Secure Smart Home - problems and solutions

<< Youtube Video





HOME ASSISTANT

Open source home automation that puts local control and privacy first. Powered by a worldwide community of tinkerers and DIY enthusiasts.

People often ask me about my vision for Home Assistant. Before I can describe where I want to go with Home Assistant, I should first talk about how home automation would look in my ideal world. This will be the aim of this post. I'm not going to focus on protocols, networks or specific hubs. That's all implementation details. Instead, this post will focus on what is most important: the interaction between the users and their home.

YOU SHOULD NOT HAVE TO ADAPT TO TECHNOLOGY

When people start using home automation, they always experience home control first: being able to control devices in new ways using a phone or computer. They believe the future is now and their app will be their remote for their lives. They only focus on what they are getting, not on what they are losing. You install some light bulbs and all of a sudden you are no longer able to use the light switches. You'll arrive at home at night and have to pull out your phone, open the app, let it connect and finally you'll be able to turn on the light. All while turning the light on could have been a switch away.

Yes, you can solve this with presence detection. What if your phone runs out of battery? You'll have to resort to the switch again.

If you find that using your new home devices is cumbersome, the promise of home automation technology has failed you. Your lights should work with both a switch (or button) at the entrance of your room and via presence detection. Honestly, there are hardly any valid use cases for being able to control lights from your phone except for showing off.

YOU ARE NOT THE ONLY USER OF YOUR HOME AUTOMATION

People tend to forget that they are not the only ones in their home. As the developer of your house you're enthusiastic about the possibilities and are willing to overlook flaws. Chances are very high that the other people in your household have different hobbies and just want to mind their own business.

This means that everything you automate has to work flawlessly. If you successfully manage to cause a response to some stimulus 90% of the time, you're going to have a disproportionately poor experience 10% of the time. A common automation that fits this pattern is to fade the lights when you start watching a movie or series in the living room. It only works if everyone is watching.

LIMIT THE IMPACT OF FALSE POSITIVES AND NEGATIVES

With every automation, you always have to think: what will be the impact if it doesn't work? Home automation is composed of many different systems by many different vendors that speak many different protocols: things will go wrong. It's up to you to make sure that they have a limited impact when they fail. Ideally, devices should fall back to a pre-smart home experience. A Philips Hue bulb will act like a standard white light if turned on/off using a normal switch or when not connected to a hub. If things get worse when your system is out of order, your users will revolt. Take for example the Nest thermostat that had a bug in the beginning of January which caused it to stop heating the house, yikes!

// PERFECT HOME AUTOMATION

Original article >>
www.home-assistant.io/blog/2016/01/19/perfect-home-automation/

THE PERFECT APP IS NO APP

Home automation should blend with your current workflow, not replace it. For most devices, there is no faster way to control most devices than how you are already doing it today. Most of the time, the best app is no app. The only interface that can be more convenient, and is accessible for visitors of your home of all ages is a voice interface. The industry has realized this too and there are some major players focussing on voice interaction. Take Apple for example: the only way to control your HomeKit devices is with Siri. Amazon has taken it one step further with the Amazon Echo, providing an always-listening connected speaker/microphone for the living room. I expect a lot more companies to join this segment in 2016.

Voice interfaces are not perfect either. The speed at which you can issue commands is low because you have to wait for a response. There are also issues with the discoverability of commands, recognition of accents and dependency on the cloud for processing your voice. I believe that all but the first one are problems that are going to be solved eventually.

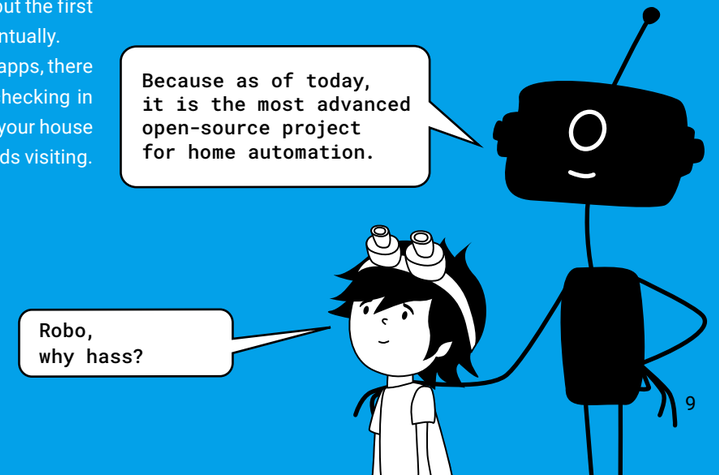
This however doesn't mean there isn't a place for apps, there definitely is. They are perfectly well-suited for checking in while you're away, browsing the state changes of your house or making the lights go all funky when there are kids visiting.

YOUR SYSTEM SHOULD RUN AT HOME, NOT IN THE CLOUD

The cloud is a magical thing. Somewhere in the world there are computers collecting the data that your house generates, testing them against your automation rules and sending commands back when needed. The cloud will receive updates and improve itself over time so it is able to serve you better. Until it's not. There are many reasons why your home might lose its connection to the cloud. The internet can stop working, an update might have gone wrong or the servers running the cloud crash.

When this happens, your house should be able to keep functioning. The cloud should be treated as an extension to your smart home instead of running it. That way you'll avoid awkward situations like when Amazon AWS was down and the Amazon Echo stopped working.

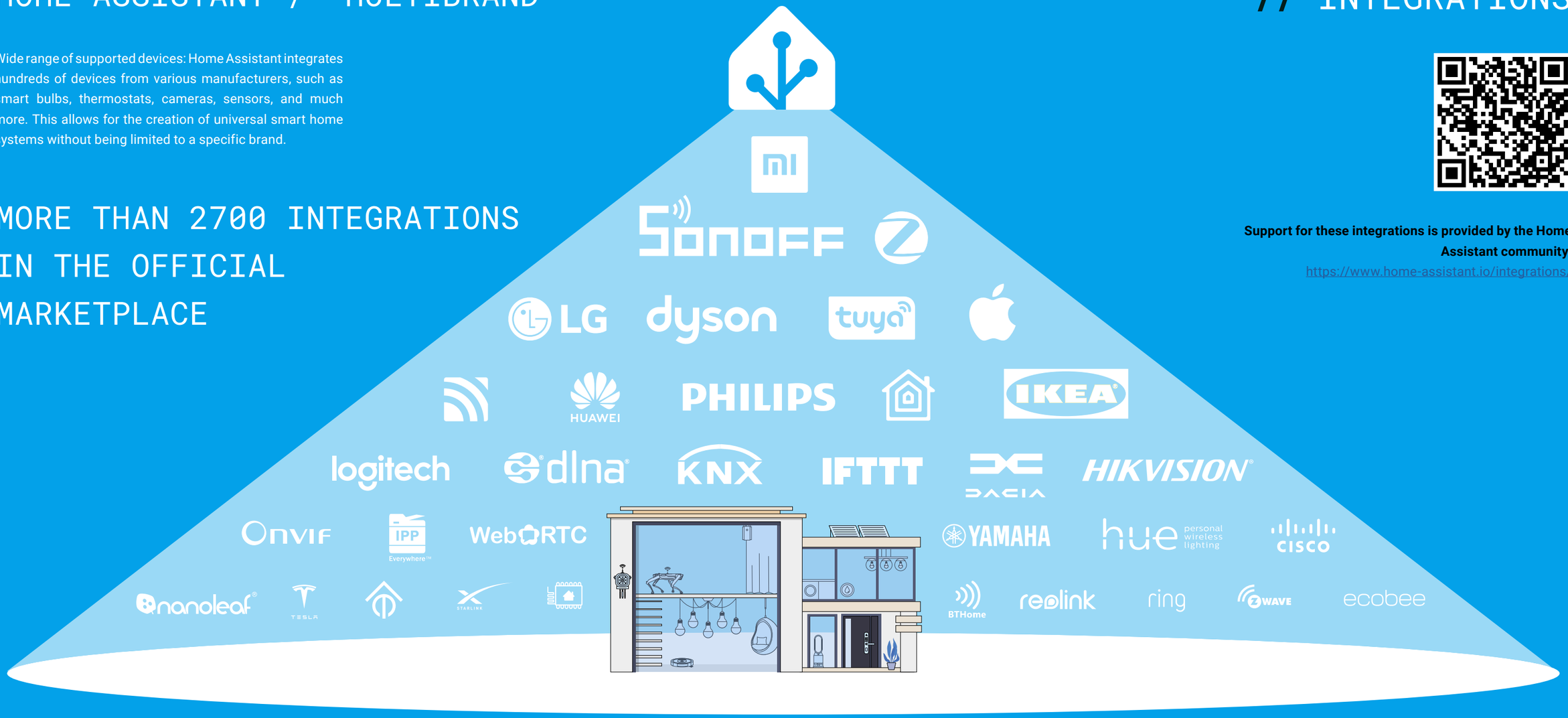
Article by Paulus Schoutsen (founder of one of the most popular home automation systems today, Home Assistant).



HOME ASSISTANT / MULTIBRAND

Wide range of supported devices: Home Assistant integrates hundreds of devices from various manufacturers, such as smart bulbs, thermostats, cameras, sensors, and much more. This allows for the creation of universal smart home systems without being limited to a specific brand.

MORE THAN 2700 INTEGRATIONS IN THE OFFICIAL MARKETPLACE



// INTEGRATIONS

Support for these integrations is provided by the Home Assistant community.

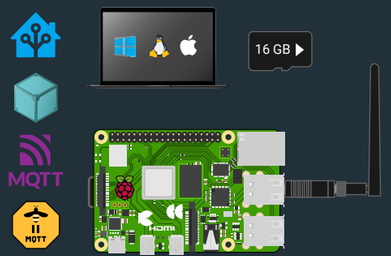
https://www.home-assistant.io/integrations/

HOW TO SET UP A SOVEREIGN SMART HOME

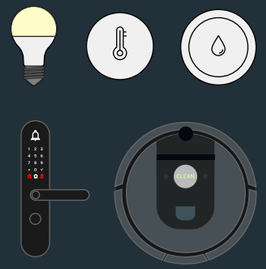
STEPS TO CORPORATE-FREE CLOUD

Here are some simple steps to create an affordable smart home using Home Assistant as a device communication application and Robonomics as a corporate-free, decentralized cloud platform. Robonomics leverages modern and secure Web3 technologies, ensuring enhanced security throughout the process.

1. Setup Home Assistant



2. Connect Zigbee devices



3. Configure cloud with Robonomics

START HERE YOUR SMART HOME

We have prepared detailed guides on setting up a smart home on Robonomics. The steps may vary depending on your specific situation: whether you already have an operational Home Assistant with paired devices, or if you are starting from scratch to establish your smart home.

FOR HOME ASSISTANT USERS

FOR NEW USERS

WIKI ROBONOMICS >>>

ENGINEERS AT WORK

Robotics engineers help come up with ideas, create, and test scenarios based on the Robonomics platform. And each of us uses what we work on!

When we assembled the first batch of air sensors, each engineer installed a sensor at home. When we began to explore the possibilities of Home Assistant, everyone bought themselves smart switches, light bulbs, sensors and began to customize integrations to fit their everyday life. We are really interested in trying out something new. This is how pieces of knowledge are formed during our daily work, which we are happy to share with others.

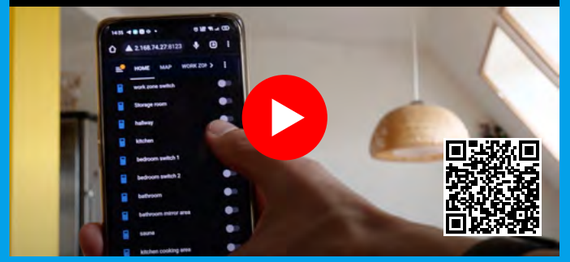
So over the past year we have expanded our sensor network. The main increase occurred on the island of Cyprus, but sensors began to appear in other regions. Today, a sensor map no longer looks like a hobby - it is a full-fledged operating network of dozens of sensors.

We now have our own devices: switches, IR remote controls, energy meters. The circuit diagrams of these devices, as well as the firmware, are open source and publicly available.

We have made significant progress by creating an integration for Home Assistant, which allows you to abandon the use centralized clouds and proxies, and interact with your smart home using Web3.

Engineers perform very important work for the entire project - they bring the ideas of Robonomics to life.

AN INTRODUCTION TO HOME AUTOMATION BY ROBONOMICS TEAM



HOME ASSISTANT ROBONOMICS INTEGRATION

Integration gives you the remote access to your local smart home through encrypted transactions in Robonomics blockchain.

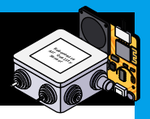
Alena Bugrova
www.hackster.io

AUTOMATION OF VIDEO SENDING TO ROBONOMICS

This article discusses the process of saving and viewing video via the web3 cloud using Robonomics integration.

Makar Chernyaev
www.hackster.io

CONNECT AIR QUALITY SENSOR TO HOME ASSISTANT



This arcticle explains, how to connect SDS Air Quality sensor with Luftdaten & Robonomics Firmware to HA. Here you can find more information about Sensors Connectivity project.

Mariia Livshits
www.hackster.io

SENSORS CONNECTIVITY

Set up your own decentralized air quality monitoring network.

Mariia Livshits
www.hackster.io

CREATE DIY IR REMOTE CONTROLLER

In this article you will create DIY IR remote for control an air conditioner.

Makar Chernyaev
www.hackster.io

ROBONOMICS IR REMOTE CONTROLLER WITH ESPHOME

The Robonomics team creates devices with a Type-C port for open-source firmware updating. In this article you will upload ESPHome firmware on it and connect it to HA.

Makar Chernyaev
www.hackster.io

AQARA SMART LOCK N100 CONTROL VIA ROBONOMICS

A lock in a house is one of the most important things for security, so you want to have a reasonably reliable way of controlling it remotely. At the very least, you need to know how the lock itself works.

Alena Bugrova
medium.com

ROBONOMICS 1 / 2 GANG SWITCH WITH ESPHOME

The Robonomics team creates devices with a Type-C port for open-source firmware updating. In this article you will upload ESPHome firmware on it and connect it to HA.

Makar Chernyaev
1 gang - www.hackster.io
2 gang - www.hackster.io

ROBONOMICS ACADEMY

The core developers of the Robonomics project, robotics specialists and PhD research scientists offer to pass through compendious experience based on 7 years of work with web3 projects. In 2023, we successfully released four guides of different approaches and levels of complexity on the topical issue - Sovereign smart home.

3 **Guide**

Introduction to open source solution for private smart homes

By Vadim Manaenko

New home , new habits!

Guide about a smart home, when there is a need for it, what it consists of and what it can give. We will dive deeper into the practical side of building a smart home and show you how to assemble a Smart Home Board.

Make your first step towards creating a fully functional and automated home.

More

9 **Course**

Sovereign Smart Home with Robonomics and Home Assistant

By Ivan Berman

In this course, you will get:
- Knowledge of smart home architecture based on common protocols and developments
- Practical skills for setting up and connecting smart home equipment
- Basic skills for using the Robonomics parachain for IoT

More

9 **Guide**

Fake Housewife & AI research Smart Home Solutiona

By Anna Wimmer-Savinova

This is a creative guide - an experiment with AI, which details the problems of standard smart home solutions. It tells the story of how the housewife Zoy (who is an artificial intelligence) searches for non-standard automation options, as well as the possibilities of independently connecting the smart home of Robonomics.

Join us in participating in this experiment!

More

2 **Guide**

Escape from Black Mirror

By Sergei Lonshakov

Rules for Escaping the Black Mirror

Notes for netrunners on cutting the umbilical cord of the cloud I call «The Black Mirror Escape Plan» with a reference to the futuristic series that has already happened in my time.

So, here is the escape plan!

More

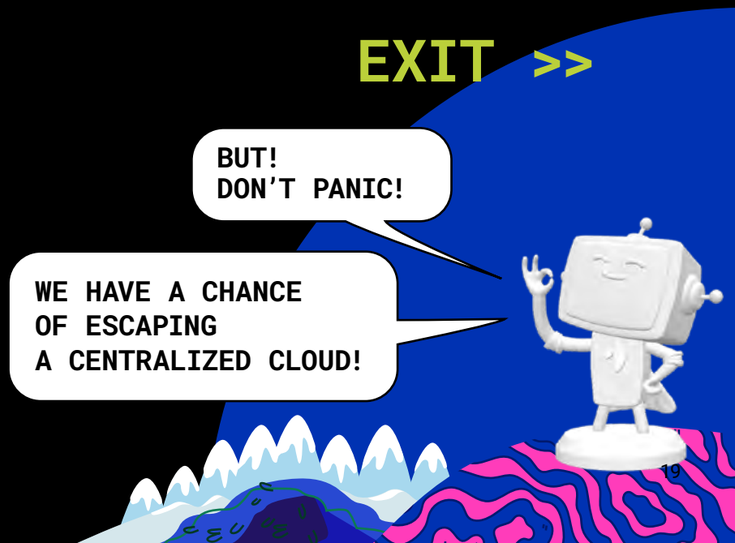
IT’S GONNA GET WORSE

What will happen if a large telecommunications company locks the smart locks in all the apartments in the city? What if a car manufacturer remotely blocks necessary functions of your car due to account policy peculiarities in your region? What?

This is exactly where we are all heading now. And this could be just the beginning of a widespread nightmare that will quietly embed itself in the lives of many modern people in a twisted way.

Read more >>

EXIT >>



Type-C on board
for self-updating firmware

ROBONOMICS HARDWARE

NO CENTRALIZED CLOUD INCLUDED

Since 2019, we have started thinking about creating devices, as most of the ready-made solutions on the market are related to centralized cloud technologies and, unfortunately, have a number of inconveniences when used, as well as the risk of failure or leakage of personal data.

We have a deep understanding of the problems faced by users of advanced smart homes. And in 2023, we released our first devices.

With Robonomics hardware, you will gain full control over your home, free yourself from corporate clouds and local restrictions.

All our devices are open hardware and run on open source software. They can be connected to a local smart home server based on Home Assistant and managed remotely using Robonomics.

In the future, we plan to expand our line. We continue to work to offer you more interesting things in the near future!

robonomics.network/devices

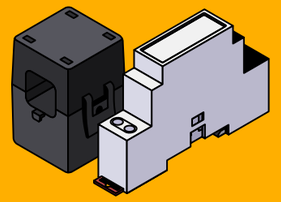
Youtube HW

@RobonomicsHW

Donate #DOT #KSM
to Robonomics Hardware
and get smart devices from the team!

UNIVERSAL IR REMOTE CONTROL

IR remote control for home automation - smart control of any air conditioner, TV, stereo system, opening/closing gates in your home.

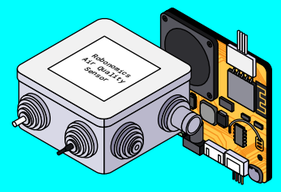


SMART ENERGY POWER CONSUMPTION MONITORING

A smart energy meter helps identify the main sources of electricity consumption and prevent energy leaks.

1,2 GANG WI-FI SMART SWITCH

Smart 1,2-gang wall switch with energy monitoring and Wi-Fi connection. Large touchable buttons, soft button backlight.



AIR QUALITY SENSOR

PM2.5 / PM10 / Tmp / Hm (expandable to VOC, CO2, ATM). Usage: indoor / outdoor. Ready to install - just connect it to Wi-Fi and a socket. Join the decentralized open-source map.

KEY FEATURES OF ALL OUR DEVICES:

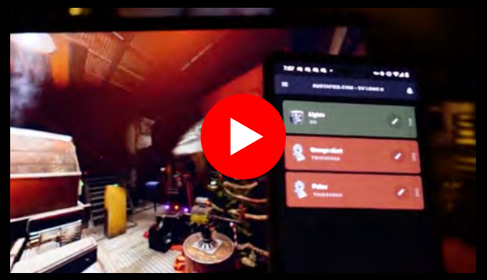
- Type-C for open-source firmware Tasmota upgrading
- Doesn't need any cloud service
- Home Assistant Friendly
- Wi-Fi

AND WHAT ELSE WE CAN!

RUST IFTTT ROBO HASS

We are making a portal between the real world and online games through Robonomics. Explore our initial draft experiment that merges #IoT with Rust @playrust, a top-10 Steam game.

@EnsRationis



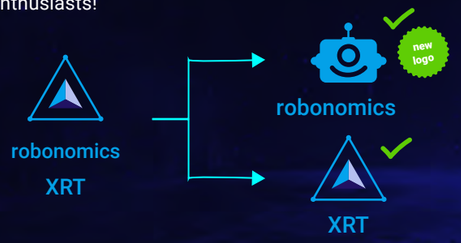
@playrust has a cool application that allows you to watch your base. Any notifications from the in-game sensors and cameras are sent directly to your smartphone. My fellows and I had a lot of fun on Christmas holidays trying to link this app to the LEGO house.

The idea: every time someone enters some room in the game base, a light will turn on in a equivalent LEGO room. Generally speaking I am creating a reverse digital twin by pairing a virtual object with a real one.

@berman_ivan

ART & SCIENCE DEP.

At Art & Science, we don't just draw, we explore and experiment with technologies, turning complex ideas into clear infographics and visual content. Our goal is to make everything understandable and accessible for you. And, of course, we add a bit of fun for all robot and technology enthusiasts!



We recently rebranded the Robonomics logo:

- Now everything has become clearer - we visually separated the project and XRT token logos. This will help avoid confusion in the visual context and infographics. Now we have a separate Robonomics logo, and the XRT logo remains unchanged.
- The new image of the Robonomics icon is as friendly and welcoming as possible. We, as always, are open to you. And the XRT token logo consistently maintains its appearance and you will continue to recognize it on trading platforms.
- The basis of the new logo is a coin from the first illustrations of 2017 - this indicates that the original project concept remains unchanged.
- Acknowledge our updated materials with the new logo as real and current. And do not believe channels that use incorrect colors and logos. It is important to us that no one is deceived.

This year, we enthusiastically devoted time to studying artificial intelligence as an assistant for our department. We mastered the search for information through autogpt (for example, the «Fake housewife» guide at robonomics. academy), learned to create high-quality images and videos on stablediffusion, and even make AI voiceover for videos, which greatly accelerates the content creation process. You can see all this on our websites and channels. We are happy to share our achievements with you!

So we also started started trying out artificial intelligence translations for our website. This lets us create content in different languages while we build pages, making it easier for people around the world to connect because Robonomics isn't bound by geography. There have been some linguistic mistakes so far, and it's not exactly poetic, but it gets the job done in conveying important information.

But after all our experiments with artificial intelligence, we are still convinced that the creativity of an artist is irreplaceable. Therefore, we continue to create arts, filled with ideas, love, and soul, «by our own hands». We create creative prints for clothing, wallpapers for desktops, ART-NFTs, and fan stickers especially for you. Follow our creativity, use and enjoy!

@Anna_Wimmer_S
@positivecrash
@MargaritaRimach
@Nekosanki
@zirreysl

#RobonomicsArt

ART-SHOP
ROBONOMICS
<<< robonomics.network/shop/

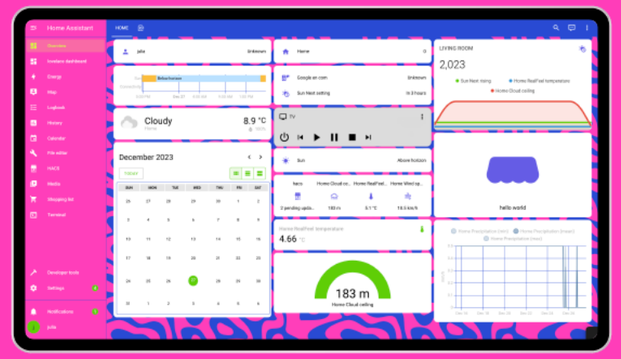
WALLPAPERS
ROBONOMICS
<<< https://robonomics.network/wallpapers/

ROBO × ART

HOME ASSISTANT DESIGN

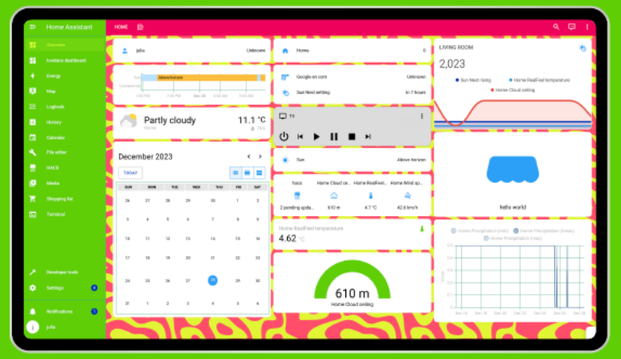
We are all unique and irreplaceable, right? And we thought about this, so we released the first series of individual Home Assistant interface designs for your home. Enjoy and keep a look out for new collections, we'll be updating with new ones.

<< Download and install
robonomics.network/
home-assistant-themes/



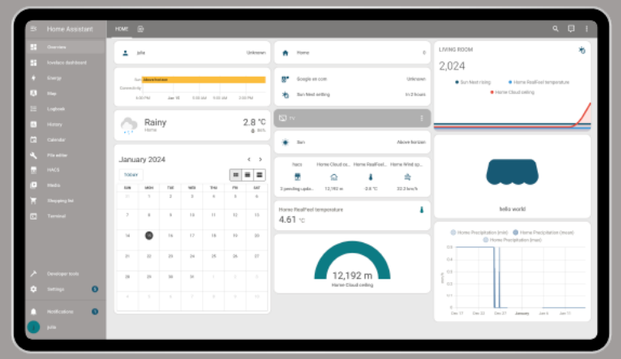
«Pink mushroom»

«Deep sea»



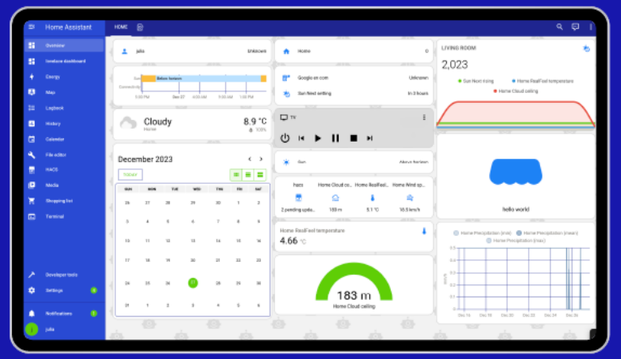
«Jolly grasshopper»

«Funny Robots»



«Pinout»

ROBO × ART



«Robo»

PINOUT -
NEW ROBONOMICS SPIN-OFF

Pinout is an integrator of smart home solutions based on open source software and cloud-free hardware. The company was established on April 28 2023.

The main directions of development of Pinout are:

- sale of devices for smart home systems;
- providing installation and maintenance services.

The experience gained allowed us to create basic sets of equipment, with the possibility of customization for the client. This set covers the tasks of controlling light, climate, and receiving data from sensors. We select equipment that is competitive in price and compatible with a large number of manufacturers on the market.

The presence of a showroom and warehouse will allow us to fully demonstrate the uniqueness of our solutions and promptly respond to customer interests/needs.

Our strengths:

- talented team of engineers with education in robotics;
- 3+ years of experience with R&D in the field of IoT devices;
- 1,5 years of work in Cyprus with local developers and market research;
- understanding the client's problems and desires;
- prompt response to customer requests (within 24 hours).

The technology stack on which we work allows us not to limit ourselves only to IoT devices, but to connect smart kettles, refrigerators, TVs and other devices, including those designed by us, to the smart home system.

We are confident that customers who are interested in smart home solutions will not remain indifferent to our futuristic (fancy) devices.

A large volume of real estate for investment creates a need in Cyprus to obtain prompt information about the condition of objects. Our solutions allow you to reduce costs, increase the attractiveness of properties and understand exactly what is needed in terms of maintenance.

@pinoutcloud

#SMART HOME
#COMMON AREAS
#RESIDENTIAL
#OFFICE
#PRIVACY
#ZIGBEE
#HOME AUTOMATION
#WEB3
#CYPRUS

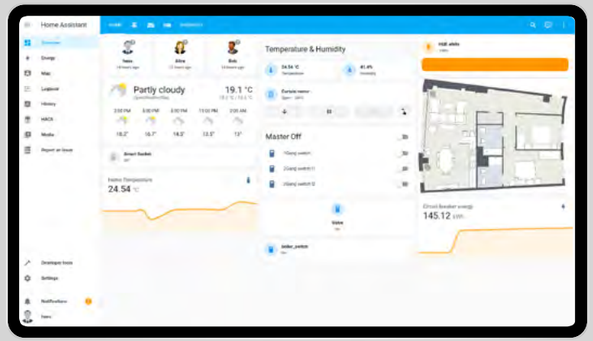
PINOUT

pinout.cloud

PINOUT SCENARIOS

At the company, we understand that at the end of the day, you don't need a smart switch or a smart thermostat. What is really important is to live in a cozy and comfortable home that helps in the daily routine.

The number of smart devices is very limited, but the number of scenarios that can be implemented with their help exponential. Pinout engineers know how to speak the language of scenarios to decide on the set of devices you need.



PINOUT

RESIDENTIAL

QUBE

Each of us has our own daily routine and habits. Home is a personal space where you would like to relax and be with yourself and your loved ones. Following the precepts of the founder of Home Assistant, your home should be your assistant, and not require constant attention.

A smart home system will help bring comfort into everyday life. It will help you get up in the morning refreshed, heat up the water or turn on the air conditioner. When you leave for work, the system will turn off unnecessary appliances and help you save money. If something doesn't go according to plan, the house will be able to let you know about an open window or a water leak.

But we are not machines that do the same thing, right? What if guests come over or you go on vacation. Engineers will help you setup complex scenarios so you can focus on the important things.

OFFICE

FIJI

There are usually a lot of people in offices and they are all different, with their own needs and requests. However, there is always someone who is responsible for the office and keeps it in working order. The task of automation in this case is to provide the most detailed information about all office systems and premises.

Usually in an office there are issues of access for people to the premises, be it employees or guests; temperature and lighting control; alarm systems and measuring instruments for monitoring consumed electricity.

The administrator can get a control panel for the entire office, and each employee will have access only to those systems that he really needs.

COMMON AREAS

COLAMBIA

If you live in a smart apartment, you would like the whole house to become smarter. In modern complexes there are often swimming pools, gyms, and saunas. The house has external lighting, its own power consumption and solar panels, which help to become a more self-sufficient home.

While in your apartment, you can turn on the sauna and check if there is anyone in the gym. The house will automatically turn on the street light after sunset and turn it off before dawn. At the end of the month, it will report to you on the electricity generated from the solar panels.

English version

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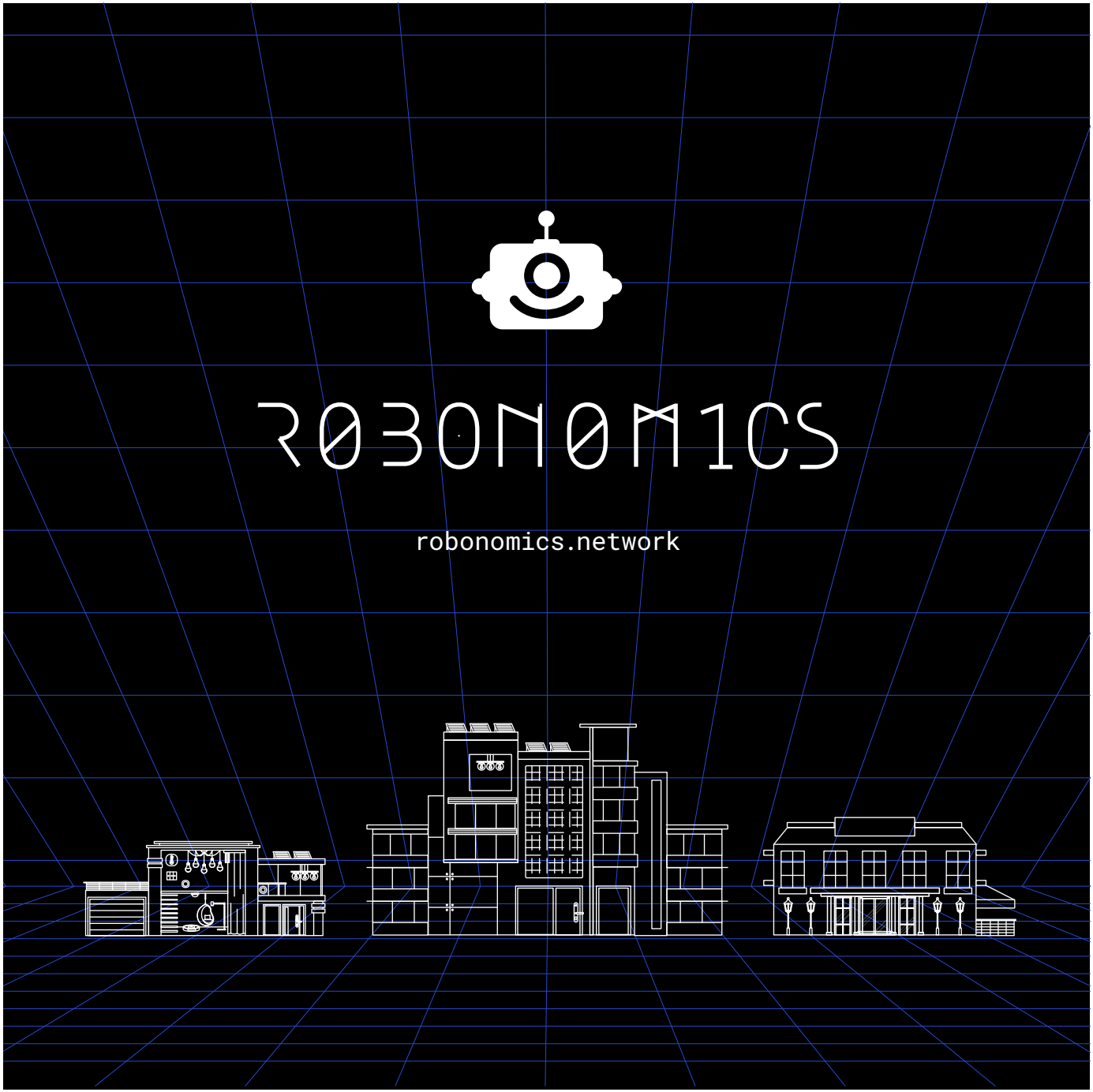

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