

# NetOP Decentralized IoT Platform

**Official Whitepaper v1.1 / 29.10.2020**

End To End Decentralized IoT Broker and Application Platform For  
All Connected Device Manufacturers, Developers, System  
Integrators and Users

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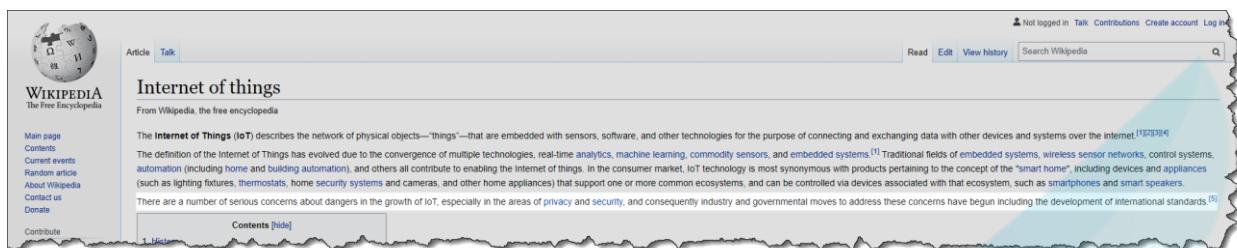
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# Foreword

## Why We Need De-IoT Network?

# Foreword



We started the preface with the definition of IoT in wikipedia, actually the problem is so obvious that it is included in its definition in the first paragraph.

Each connected device needs a server to send its data, and the software running on these servers is process data and produce meaningful output for users.

Currently, all IoT systems work with central servers. As we have seen countless times so far, central systems are at risk no matter how well protected they are. You also have to trust your service provider regarding the privacy of your data.

You will not be sure that your data will not be shared or manipulated with anyone because it can be very easy and profitable for someone

Remember the Facebook scandal that happened recently, the giant company had to admit that they sold their users personal data. No matter how reliable the company looks, as the great anatolian thinker Mevlana said "*The secret that two people know is not a secret*"

You have purchased an alarm system for your home or a GPS tracking system for your lovely dog, In most cases, you just created an account, scanned a qr code and make the system work, you do not even know who you are getting service from.

Most users think that communication is between their smart phone and the their device, but in the background this is not the case.

Or you may have made a serious IoT investment for your business as a result of long researches.

You have no choice but to believe and trust that the service company will continue to serve. Even if you have signed a contract with them there is no guarantee that that company will survive.

As a result, device manufacturers, SaaS providers and users need a solution that will eliminate performance, security, privacy and trust concerns.



The mission of the De-IoT Platform is to provide a secure, scalable and robust end-to-end infrastructure for device manufacturers, SaaS providers and users by creating a decentralized IoT ecosystem as a solution to existing problems.

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# Get to know **NetOP (Network Operator)**



# Corporate Profile

## Who We Are?

- NetOP Technology; is a team company that tired of tailor-made IoT projects they've been doing over the past 15 years.
- We only believe in LPWAN Technologies.
- We developed a patented IoT hardware & software architecture like Lego blocks that will quickly adapt to all IoT projects.
- The company established in 2017 as a 3rd StartUP after 2 successful exits.
- HQ based in Amsterdam and a hub for the EU market, other company in London for the UK market and the development and manufacturing facilities are in Izmir.

deiot.network

## What We Do?

- We finished to develop IoT hybrid data streaming platform and hardware family at the end of 2018.
- In 2019 we focused on verticals that we planned from the beginning to reach millions of connected devices.
- We have 10 verticals now and a few of them mature enough as SpinOUT.
- NetOP trying a new business model; finds a vertical markets, from different sectors. develops a flawless solution, starts selling and reaches a few big customers. If the product mature enough and have the market potential for millions of sensors, vertical solution transforms as an independent company
- Now, by decentralizing our entire platform, we are leading the way to overcome unresolved problems in the entire IoT ecosystem.

# Group of Companies

## NetOP IoT Network Operator Euro B.V. AMSTERDAM

Netop  
Teknoloji  
Yazılım San.  
Ve Tic. A.Ş  
İZMİR

Aksu Teknoloji  
Dış Tic. Ltd.  
İSTANBUL

Netop Aero  
Suite Euro B.V.  
AMSTERDAM

Netop U.S. LLC  
SAN DIEGO

Netop R&D  
Development &  
Production  
URLA



DISTRIBUTOR



SIG MEMBER



MOBILE IoT  
INNOVATOR



MEMBER

# PROUDLY

ACCEPTED into



"ENERGY & INDUSTRIAL IoT"  
Accelerator Program

Selected As One of THE TOP25 IOT StartUp of the 2020



WINNER of



Vodafone & The Next  
Web  
IoT Innovation  
Challenge

ACCEPTED into



ENERGIA VENTURES Program



ACCEPTED into  
THE UNIVERSITY  
of EDINBURGH



WAYRA ACCELERATOR Program



**NetOP**  
TECHNOLOGY

## GLOBAL PARTNERS

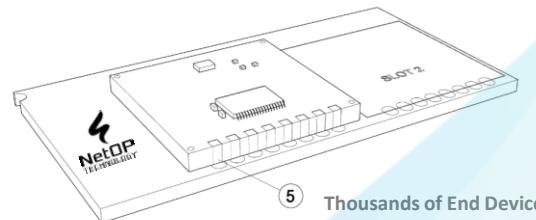
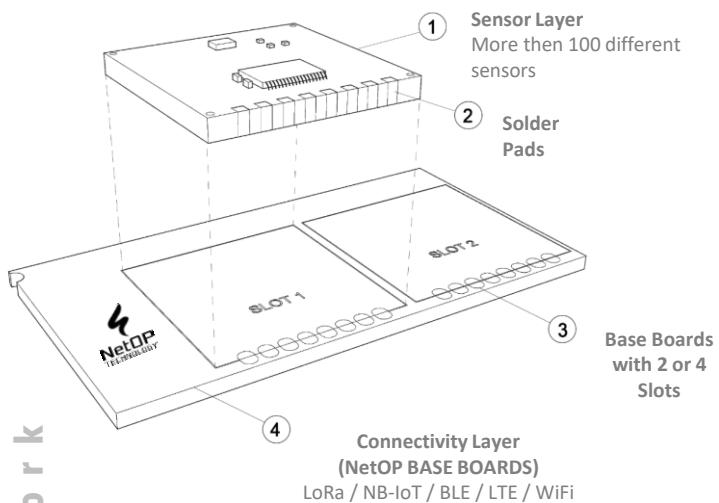


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**IoT Hardware**  
**Hundreds Of Device Models**  
**Already Manufactured as**  
**De-IoT Ready!**

## OUR PATENTED INNOVATIONS

## Lego Blocks Like Devices



Digital Transformation  
From  
Tailor Made IoT Projects  
To  
Plug & Play IoT  
Projects

3 different connectivity  
100 different sensors  
2 or 4 slots base boards  
3 different enclosure options  
3 different battery options

\*NetOP device designs, protected by international laws and patents

\*All devices are already manufactured and using in real life projects.

\*Please visit [iot-shops.com](http://iot-shops.com) for check and order samples if needed

## I O T W I Z A R D

## Design IoT Device Yourself

deliot.network

1

 PICK YOUR  
CONNECTIVITY


2

 PICK YOUR  
SENSOR(S)

Temperature  
Humidity  
Temperature & Humidity  
Tilt  
Accelerometer  
Motion Detection  
LDR  
CO<sub>2</sub>  
Smoke Detector  
Vehicle Detection Sensor  
Glass Break  
Current Sensor  
Door Sensor  
Water Detect  
Vibration  
Asset Sensor  
Desk Occupancy  
Compass Sensor  
Water Level Sensor  
Infra Red Sensor  
Ultrasonic Sensor  
Smart Metering

3

 PICK YOUR  
INDUSTRIAL  
GRADE

Standard  
IP65  
IP67  
Industrial  
Water Proof  
Tailor Made  
With Your Own Logo  
...

4

 PICK YOUR  
POWER TYPE

1 X AA Battery  
2 X AA Battery  
3 X AA Battery  
Chargeable Battery  
Solar  
USB

 PICK YOUR  
PLATFORM


Can be hybrid...

+ 100 different sensors more

Depends on your needs

Depends on your needs

To any platform with API

d e i o t . n e t w o r k



# Pre-integrated With De-IoT Network

**All Products Already Manufactured And Ready To Use In Real Life Projects!**

We know the challenges of building an ecosystem. For the platform to come to life, applications and compatible devices are needed, so for a quick start, we produce all our products in accordance with the De-IoT platform. Until De-IoT Platform comes to life, you can purchase the products on  IoT Marketplace. Netop IoT Suite, IoT-Shops.com is a NetOP group company and global market leader in this field. We have warehouses in Houston, Amsterdam, Mumbai and Izmir. We have sold our products to 65 country in 2020 only. We are shipping globally.

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## Introducing **De-IoT Network & Platform**

## What Is The DeloT Platform?

deiot.network

DeloT Platform offers a robust and scalable broker structure, LPWAN network and a secure and fast infrastructure for SaaS applications.

It supports all communication protocols ie. TCP / UDP, MQTT etc. , so any device can easily adapted in the platform.

Microservice architecture allows any application to be easily adapted to the platform.

DeloT Platform brings solutions to all security, privacy, performance, sustainability and scalability and standardization problems

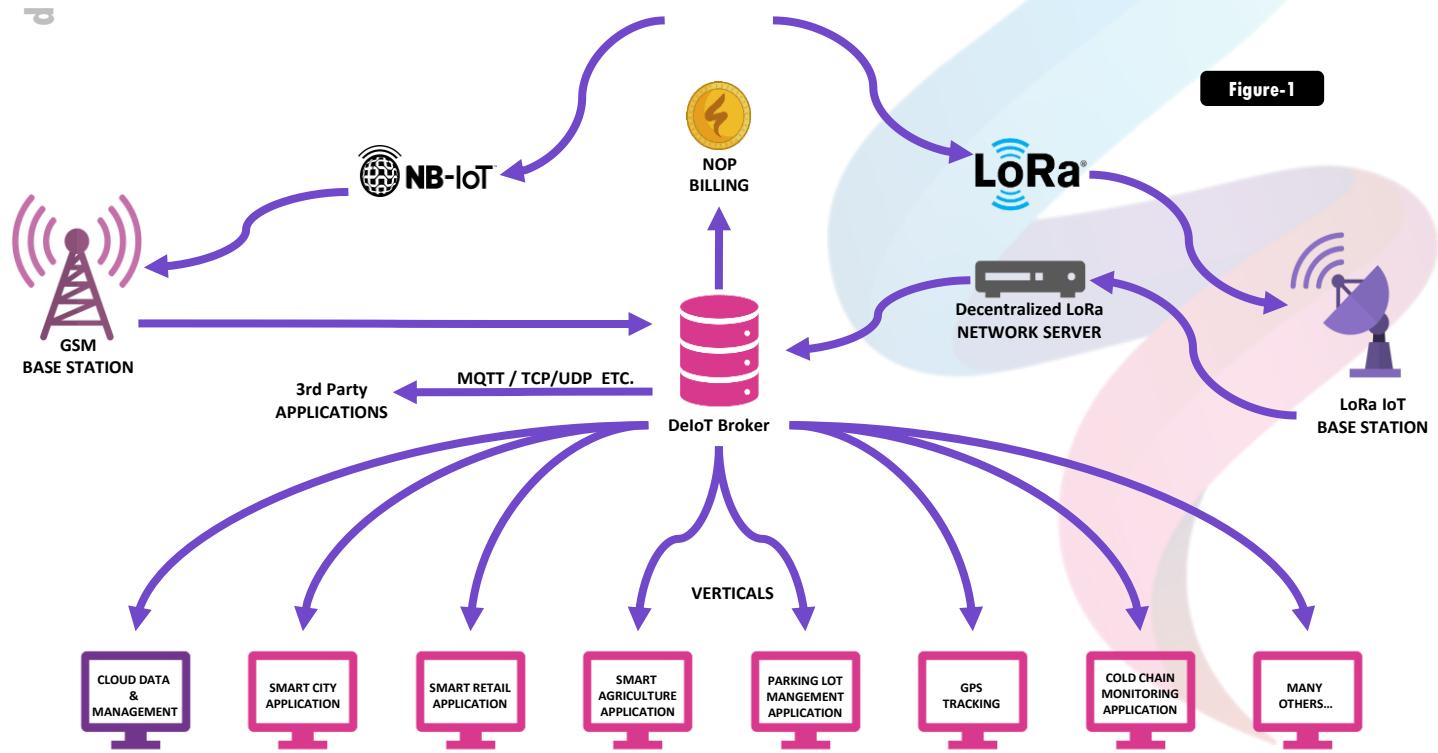


Figure-1

## How Does It Work?

**De-IoT platform is built on server computers owned by distributed participants.**

The platform consists of two main parts. The first part is a data flow and routing layer built on masternodes, the second part is the vertical application layer built on peer nodes.

The architectural structure of the system is summarized in Figure 2 and the flow diagram in Figure 3.

As summarized in Figure 2, the platform includes a large number of internet of things flow brokers in Docker containers.

Load balance between docker containers is controlled by Kubernetes technology.

These nodes are considered to be main nodes and will manage the distribution of data from devices and keep records.

In the second part of the system, vertical applications (temperature management, social distance management, shift tracking system, etc.) installed in Docker containers are available.

Distribution and load balance between these clients will be provided over the main nodes.

When the flow chart is examined, it will be seen that the following steps are realized. IoT devices such as sensors, gateways, smart appliances transmit their raw data to the masternode pool.

The user in the client role also makes his request to the masternode pool.

The masternode selected by Kubernetes accepts the request and routes it to a node from the slave node pool.

While making this selection, an algorithm is used in which many variables such as hosted vertical application type, uptime duration, trust and performance score, node location are included in the equation.

The node processes the data and returns the result to the user, at the same time transmits the transaction information to the masternode.

If the node has a problem processing data or does not respond in the required time, it will receive a penalty point.

In this case, the Masternode redirects work to a new node.

# System Architecture Of De-IoT Network

**Smart algorithm determines the score of each node based on various variables, trusted nodes process more data and make more profits!**

All nodes connected to the De-IoT Network have a decentralized structure. All nodes are scored with a trust algorithm running on the system. Nodes with high trust scores are randomly selected as master nodes.

deiot.network

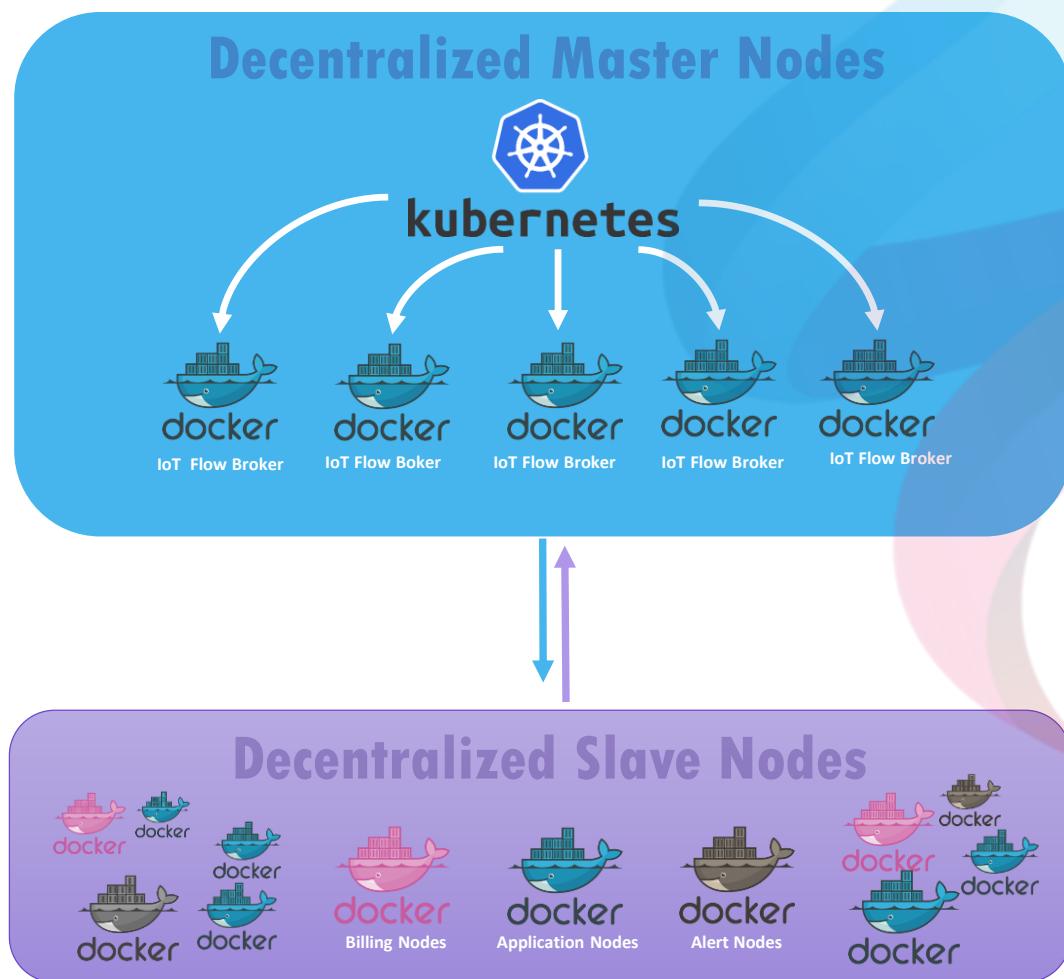


Figure-2

# De-IoT Platform Flowchart

deiot.network

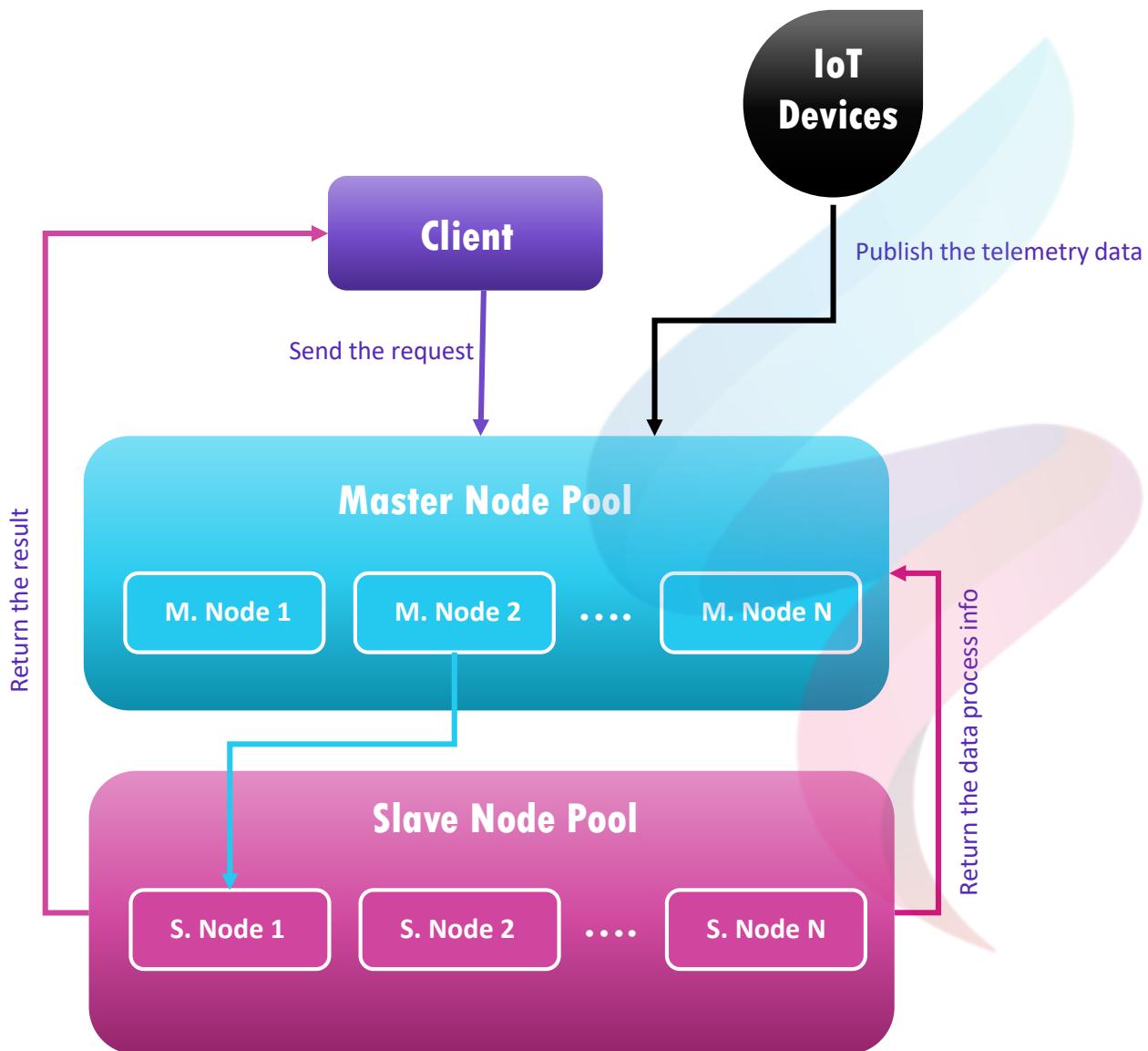


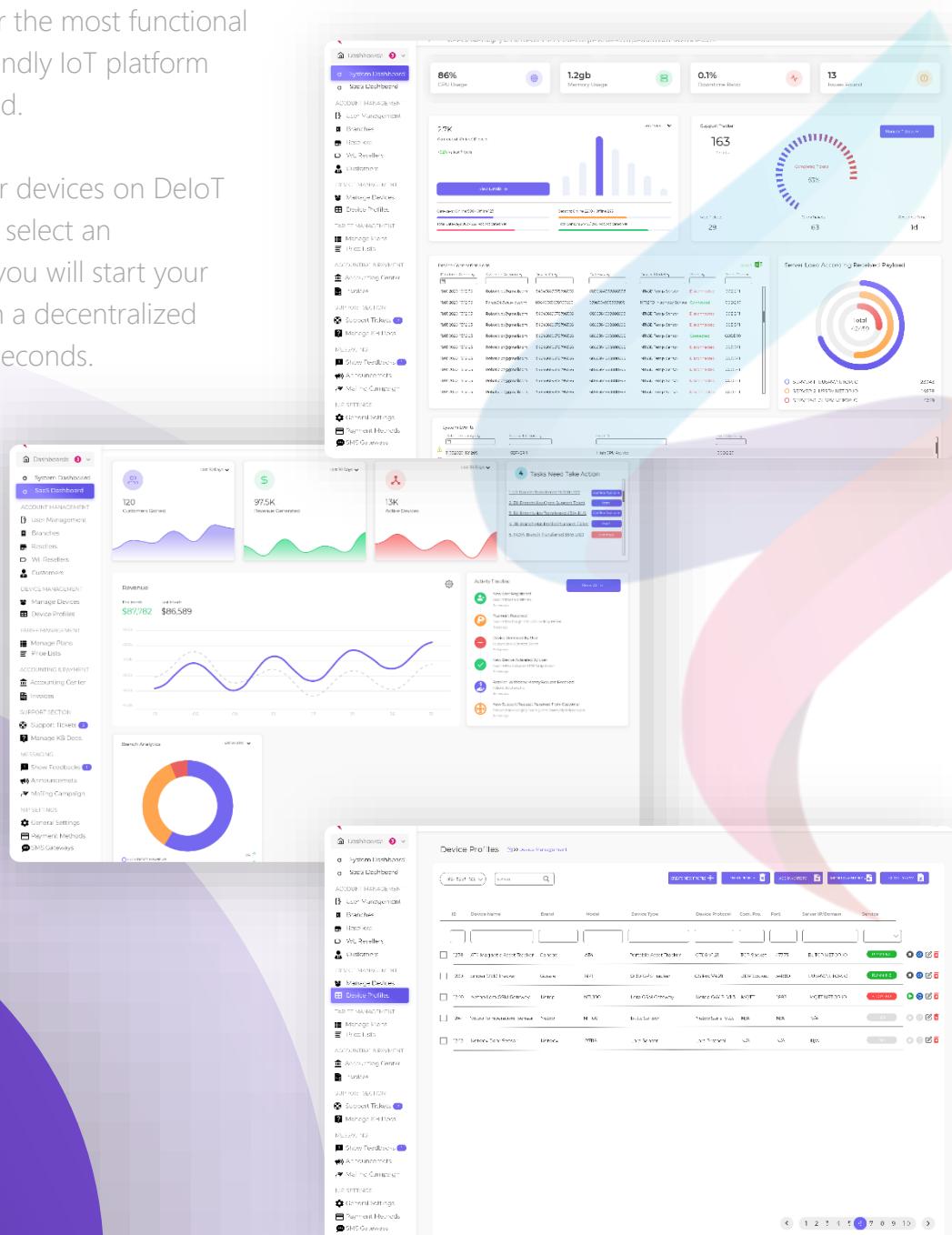
Figure-3

**CREATIVE EASY TO USE**

# Clean User Interface

Get ready for the most functional and user-friendly IoT platform ever designed.

Just add your devices on DeloT network and select an application, you will start your IoT system in a decentralized structure in seconds.



The screenshot displays the NetOP DeloT Platform interface, featuring a clean and modern design with a light blue and white color scheme. The top navigation bar includes links for Home, System Overview, Device Management, Account Management, Support Tickets, and Notifications. Below the navigation is a main dashboard with several key performance indicators (KPIs) and data visualizations:

- System Overview:** Shows CPU Usage (86%), RAM Usage (1.2gb), Network Status (0.1%), and Device Count (13).
- Customer Growth:** Displays 120 Customer Growth, 97.5K Revenue Generated, and 13K Active Devices.
- Revenue:** A line chart showing Revenue over time from \$87,182 to \$86,589.
- Bench Analysis:** A donut chart showing device distribution across different categories.
- Active Profiles:** A list of active profiles with their status and last login information.
- Device Profiles:** A table listing device details such as Device Name, Brand, Model, Device Type, Device Protocol, Com. Port, Port, Server IP, Domain, and Service.

The left sidebar contains a navigation menu with several sections:

- Dashboard:** Includes System Dashboard, Sales Dashboard, and various account management options like Bundles, Routes, W. Resellers, and Customers.
- Device Management:** Includes Manage Devices, Device Profiles, and Device Plans.
- Account Management:** Includes Manage Plans, Price Lists, Accounting Center, and Impacts.
- Support Tickets:** Includes Support Tickets, Manage Tickets, Show Feedback, Announcements, and Marketing Campaign.
- Netwings:** Includes Camera Settings, Payment Methods, and Third Gateways.

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# Vertical Dapps

## Use Case Scenarios

## Container Locator



### WHERE ?

- Shipment Facilities
- Container Warehouses
- Harbors

### WHAT ?

Container Locator is a LPWAN supported IoT device which can find exactly where your storage containers are located. It is plug & sense. Easy to deploy and install on huge container areas.

You can easily find the location of your container on a customized map, and easily track movements.



### HOW TO ?

Data is collected by NETOP sensors embedded with LPWAN Technology. Data from the sensors is periodically sent to a LPWAN-based gateway. Gateway sends information to network server where the data is analyzed by an application server that can be located in Cloud Application server.

## Workspace Utilization



### WHERE ?

- Offices
- Schools
- Workspace Locations
- Connected Spaces
- Space Utilizations
- Meeting Room Monitoring
- Desk Occupancy

### WHAT ?

Workspace utilization sensors are designed and built specific to the task of accurately and efficiently monitoring workspace utilization in today's office Environment. Based on passive data collection technology (PIR), occupancy sensors are triggered by both motion and heat, ensuring that the system is ultra-sensitive, yet ultra-reliable when it comes to tracking real-time 1:1 space utilization

Share your location with your colleagues, track personnel or equipment, reserve available workstations or meeting rooms, communicate and organize collaborative meetups with colleague and more.



### HOW TO ?

Data is collected by NETOP sensors embedded with LPWAN Technology. Data from the sensors is periodically sent to a LPWAN-based gateway. Gateway sends information to network server where the data is analyzed by an application server that can be located in offices Cloud Application server.

## Industrial Remote Monitoring



### WHERE ?

- Manufacturing Facilities

### WHAT ?

Reduce maintenance trips, improve customer service and get full control of your industrial machinery and devices at anytime from anywhere.

Online access to energy consumption, performance levels etc. Facilitate energy audits — get statistics and reports on historical consumption. Get alarms whenever certain levels are reached, if the machine has stopped etc.



### HOW TO ?

Data is collected by NETOP sensors embedded with LPWAN Technology. Data from the sensors is periodically sent to a LPWAN-based gateway. Gateway sends information to network server where the data is analyzed by an application server that can be located in the building or in the Cloud Application server.

## Connected Cooler



### WHERE ?

- Retail
- Supermarkets
- Shopping Malls
- Many Grocery Stores

### WHAT ?

Retail companies spend millions – sometimes hundreds of millions – of euros into retail display coolers for better product placement and improved quality. Coolers are typically provided to stores free of charge with the promise that they will increase sales to cover the investment. The challenge is that after the cabinets are delivered, the owner has very little visibility and control over these assets.

NETOP Connected Cooler can give you visibility of your coolers almost globally.

You'll know if they're fully stocked, if they're at the right temperature and even if they're not where they should be.



### HOW TO ?

Coolers are equipped with NETOP temperature and asset sensors embedded with LPWAN Technology. Data from the sensor is periodically sent to a LPWAN-based gateway. Gateway sends information to network server and the end user web application.

## Remote Smart Meter Reading



### WHERE ?

- Cities
- Homes
- Factories
- Manufacturing Facilities
- Universities

### WHAT ?

Remote Smart Metering is an efficient and cost-effective method or monitoring any consumable from domestic gas, water or electric usage to large scale grid management.

Take control of your energy consumption, cut costs, forecast spend and comply with regulation.



### HOW TO ?

Data is collected by NETOP sensors embedded with LPWAN Technology. Data from the sensor is periodically sent to a LPWAN-based gateway. Gateway sends information to network server where the data is analyzed by an application server that can be located in the building or in the Cloud Application server.

## Shipment Quality



### WHERE ?

- Cold Chain Tracking & All Logistics Operations

### WHAT ?

There are many tens of millions of packages and documents shipped daily to countries around the globe. Keeping track of these shipments is a tremendous undertaking. In addition, shipping companies and retailers need to be able to track the condition of temperature-sensitive or fragile items to make sure they arrive safely.

Sensors gather information on location including temperature, humidity levels, drops, rapid movement, or package openings to ensure safety and quality of sensitive materials.



### HOW TO ?

NETOP sensors affixed to packages and embedded with LPWAN Technology collect movement, location data and in special cases temperature or package opening data if the package is sensitive to environment or has a high value. LPWAN-based gateways collect data that is periodically transmitted by the sensors. Gateway sends information to Cloud server where the data is analyzed by an application server. Application server sends alerts to shipping company or retailer via mobile device or computer.

## Cargo Tracking



### WHERE ?

- All Logistics Operations

### WHAT ?

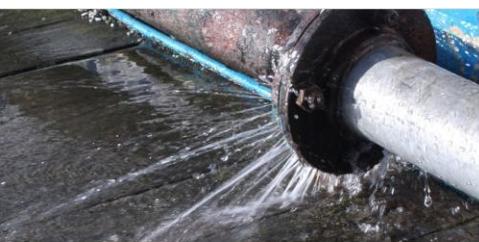
Large, high-value assets like shipping containers full of cargo, capital equipment and the vehicles that transport them are vulnerable to theft whenever they are in transit. Similarly, the large vehicles used by agriculture, construction, mining, and other industries present tempting targets to would-be thieves when they are left unattended in remote locations.



### HOW TO ?

Cargo containers, vehicles and other high-value assets are equipped with a smart, self-powered NETOP sensor module that can detect unexpected door openings, or other signs of tampering. The sensor module's embedded LPWAN transceiver communicates with LPWAN-based gateways using the LPWAN protocol. The sensor module's LPWAN transceiver periodically transmits its status information to all LPWAN-based gateways within its range (typically 5-30 km's). The gateways forward the packets, and a precise timestamp (based on time of arrival) to a network server in the Cloud.

## Water Flow Monitoring



### WHERE ?

- Leak detectors
- Smart water meters
- Fire hydrant monitors
- Automatic water valve shut off systems

### WHAT ?

With the recent increase in extreme weather events, water is becoming scarcer and its usage is becoming a front page news topic. A great amount of water is being lost through leaks in the piping infrastructure. Water leakage and meter reading represent the two biggest operational costs for water utilities.



### HOW TO ?

Multiple sensors embedded with NETOP LPWAN Technology are placed on water pipes leading into homes or buildings. If sensors detect a leak, they send an alert to a LPWAN-based gateway; meter readers can also send information to the gateway about irregular readings that may indicate a leak. Gateway sends information to the network where the data is analyzed by an application server.

## Gas Level Monitoring



### WHERE ?

- Stationary and portable gas bottles

### WHAT ?

LPWAN devices and wireless RF technology are making it easy and affordable for smart metering to monitor and manage gas levels remotely. Self-reporting gas bottles can add intelligence, efficiency and higher-levels of service to the far-flung web of customers serviced by a typical bottled gas distributor.

Long-range, LPWAN-enabled wireless sensors can transform a conventional storage bottle or tank into a smart device, which detects its own state of fill and communicates the information to a Cloud-based inventory management and scheduling application.



### HOW TO ?

NETOP ultrasonic level sensor, a micro-controller embedded LPWAN transceiver and a unique ID number. The sensor module takes periodic measurements of the gas level and transmits them to the network of LPWAN-based gateways within its range (typically 20 Km).

## Tank Level Monitoring



### WHERE ?

- Fuel tanks
- Heating oil tanks
- Water tanks
- Milk Tanks

### WHAT ?

Fuel dealers use supply tanks to store a wide variety of compounds, including heating oil, gas, propane, and water. The supply tanks need to be refilled when they are low to allow un-interrupted operations.

By implementing a smart tank level monitoring system, comprised of sensors and gateways embedded with LPWAN Technology and an intelligent low power, wide area network based on the respective LPWAN protocol, fuel dealers can optimize their deliveries and decrease their discretionary spending on fuel delivery by up to 80%.



### HOW TO ?

NETOP Technology enables connectivity, real-time analytics, reporting, and additional functions such as geolocation.

Sensors are placed throughout a manufacturing plant to monitor the values of different processes.

Sensors periodically measure all needed values and send the data to the cloud.

## Liquid Presence Monitoring



### WHERE ?

LPWAN-based liquid presence systems help organizations to ensure the integrity of liquid transport and processing systems minimizing damage and losses from leakage.

### WHAT ?

Liquid presence detection systems are commonly used to monitor leaks, but in many cases, they are placed at long intervals along a pipeline due to the high cost of deployment. But Internet of Things (IoT) sensors and networks promise to cost-effectively add more sensors to these systems to detect leaks faster and minimize any damage or losses.

By implementing a liquid presence detection system comprised of sensors and gateways embedded with LPWAN Technology, and an intelligent low power wide area network based on the respective LPWAN protocol, pipeline operators and industrial facility managers get the long-range wireless network coverage they need combined with the long battery life required for remote sensors.



### HOW TO ?

Internally-based and externally-based sensors on above-ground systems monitor the presence of liquid outside of the system to pinpoint leakage. Sensors use NETOP LPWAN to communicate and send data to LPWAN-based gateway. Gateway sends information to the Cloud-based server where the data is analyzed by an application server. Application server sends alerts on potential leakage incidents to system operators via mobile device.

## Indoor Air Quality



### WHERE ?

- Residence
- Hotels
- Hospitals
- Offices

### WHAT ?

Sensors placed indoors can analyze indoor air quality, monitor pollutants to ensure proper and safe indoor air quality.

By implementing an indoor air quality tracking monitoring solution comprised of sensors and gateways embedded with LPWAN Technology and an intelligent low power wide area and other facilities can analyze indoor air quality, monitor pollutants to ensure proper and safe indoor air quality.



### HOW TO ?

Indoor air quality data is collected by sensors embedded with NETOP LPWAN Technology. Data from the sensor is periodically sent to a LPWAN-based gateway. Gateway sends information to network server where the data is analyzed by an application server that can be located in the building or in the Cloud. Application server sends alerts based on environmental factors threshold as of CO<sub>2</sub> levels to consumers or facility managers via mobile device or computer to guarantee indoor air quality.

## Medical Fridge



### WHERE ?

- Hospitals
- Pharmacies
- Chemistry Laboratories

### WHAT ?

If a medical refrigerator loses power after hours or if employees have accidentally altered the refrigerator temperature, how would the facility know and determine the risk to the contents inside?

By implementing a medical refrigerator monitoring solution comprised of sensors embedded with LPWAN Technology and an intelligent low power wide area network based on the respective LPWAN protocol, medical facilities and pharmacies can monitor whether a refrigerator is failing or determine for how long it has lost power and if the temperature is still appropriate for the contents inside, saving the facility from unnecessary costs and helping to keep patients safe.



### HOW TO ?

Power and temperature data collected by sensors embedded with NETOP LPWAN Technology. Data from the sensor is periodically sent to a LPWAN-based gateway. Gateway sends information to network server where the data is analyzed by an application server. Application server sends alerts on medical refrigerator status to facility managers via mobile device or computer.

## Fall Detection



### WHERE ?

For the elderly, falling and not being able to get up or summon help is a very scary prospect and happens frequently enough that it is a public health problem in certain communities.

Reduce the impact and consequences of falls among the elderly by detecting and reporting their occurrence.

### WHAT ?

Reduce the time elderly remain on the floor after a fall which could lead to other medical conditions with severe consequences

By implementing a IoT-based fall detection solution comprised of sensors and gateways embedded with LPWAN Technology and an intelligent low power wide area network based on the respective LPWAN protocol, elderly people can live more full lives.



### HOW TO ?

Fall/movement data collected by sensors embedded with NETOP LPWAN Technology. Data from all sensors is sent to a LPWAN gateway as person moves. Gateway sends information to the Cloud where the data is analyzed by an application to determine what is normal and what is a fall. Application server sends reports and alerts on the fall and location of the person to a computer or mobile device.

## Water Management & Protection



### WHERE ?

- Residence
- Hotels
- Shopping Centers
- Hospitals
- Stadiums

### WHAT ?

LPWAN-enabled wireless sensors share their real-time measurements with a Cloud-based application that looks for patterns indicating a leak, broken pipe or other water-related problem. If a problem is detected, the application can shut off the water supply and alert the homeowner or property manager through their smartphone or personal computer before any additional damage occurs.

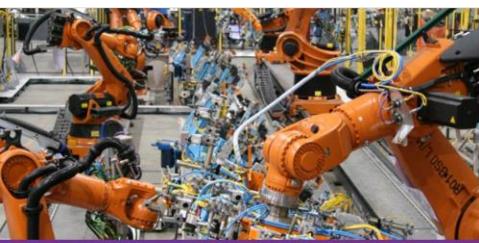
LPWAN-enabled water monitoring can also provide homeowners and property managers with important insights into their property's water usage.



### HOW TO ?

NETOP sensors' long-range, low-power LPWAN transceivers connect to IoT via either a LPWAN-based gateway or a public LPWAN network. It transmits the data they collect to a Cloud-based water monitoring application.

## Predictive Maintenance



### WHERE ?

- Manufacturing Facilities
- Fabrics
- Elevators
- Power Generators

### WHAT ?

Identify potential equipment problems before they occur by monitoring temperature, power, sound, and other elements using NETOP sensors embedded with LPWAN Technology.

By implementing a predictive maintenance solution comprised of sensors and gateways embedded with LPWAN Technology and an intelligent low power wide area network based on the respective LPWAN protocol, information on equipment temperature, power, sound, and more can be gathered. An example of this is the monitoring of ventilation fan motors which are operating almost 24 hours a day. Different mechanical harmonics as they age are well identified, and by using a LPWAN-based sensor and modem, the health of the motor and its life cycle position can be communicated to alert the need for replacement of the motor.



### HOW TO ?

Equipment status data collected by a sensor embedded with NETOP LPWAN Technology. Data from sensor is periodically sent to a LPWAN-based gateway or base station. Gateway sends information to network server where the data is analyzed by an application server. Application server sends alerts to facility manager via mobile device or computer.

## Indoor Security



### WHERE ?

- Residences
- Homes
- Schools
- Universities
- Offices

### WHAT ?

LPWAN-enabled security systems provide around-the-clock protection for residences by integrating traditional door and window alarm sensors with security cameras, intercoms and automatic door locks, all activated and operated by keychain sensors and smartphones.

Next-generation home security systems leverage LPWAN networks for long battery life, a network that can not be tampered with and the ability to integrate with WiFi networks to facilitate streaming video feeds.



### HOW TO ?

NETOP LPWAN-enabled door, window or motion sensors activate an alarm when they detect a door or window being opened, or any motion in a secured room. Wirelessly connected security camera can be triggered by sensors or started via smartphone.

## Early Fire Detection



### WHERE ?

- Hospitals
- Hotels
- Factories
- Oil Refinery
- GAS Stations
- Buildings

### WHAT ?

Every year fires cause roughly \$10 billion in property damage and injure or kill thousands of people. Commercial building fires can spread in a matter of minutes, so early detection is key to the safety of tenants and reducing the amount of property damage caused by fires. With a network of fire and smoke detecting sensors, firefighters can have a better sense of the magnitude of a fire and the direction it is headed.

By implementing a fire detection solution comprised of sensors and gateways embedded with LPWAN Technology and an intelligent low power wide area network based on the respective LPWAN protocol, firefighters can detect heat, smoke, gas, or flames associated with fires earlier and implement firefighting tactics or personnel more quickly to either prevent or reduce the impact of the fire.



### HOW TO ?

Signs of fire (heat, smoke, gas, or flames) data collected by sensor embedded with NETOP LPWAN Technology. Data from sensor is periodically sent to a LPWAN gateway or base station. Gateway or base station sends information to network server where the data is analyzed by an application server. Application server sends alerts on fire or smoke to property managers or emergency personnel via mobile device or computer.

## Energy Management



### WHERE ?

A smart outlet, which allows users to turn electronic and electrical devices (i.e. lamps, water heaters, humidifiers, water dispensers, etc) on-or-off remotely or on a prefixed schedule in order to conserve energy and maximize savings.

### WHAT ?

LPWAN devices and wireless RF technology is making it easy and economical to retrofit nearly any existing home, apartment or other structure with energy saving smart building systems. Designed to support robust, long-range wireless communications where Wi-Fi, ZigBee and other wireless technologies cannot.

LPWAN Technology was created specifically for applications that require competitively priced products to deliver extraordinary performance, reliability and service life. In this case, it embeds wireless sensors in a smart building so it can be remotely managed through LoRa-based gateways or public NB-IoT network.



### HOW TO ?

The smart home is equipped with a central control hub that communicates with embedded wireless sensors to relay data to smart thermostats, wireless sensors and lighting controllers. The home's NETOP LPWAN-enabled smart thermostats can run pre-programmed energy saving schedules that allow an area to use less heating or cooling during times they are not expected to be occupied.



### WHERE ?

- Cities
- Municipalities
- Roads and freeways
- Schools, buildings, downtown centers
- Industrial areas
- Parks, pools and other recreation areas

### WHAT ?

The OECD (Organization for Economic Co-operation and Development) estimates the economic cost of air pollution for society to be \$1.72T (in OECD member countries). Air pollution is responsible for a wide range of medical conditions. Current air pollution monitoring systems consist of expensive stations that measure a limited range of parameters. Because of the high cost of these stations, it is not practical for cities to measure air quality across a widespread area in detail. As a result, cities do not often have the type of measuring system in place to implement better air quality programs.

By implementing an air pollution monitoring solution comprised of sensors and gateways embedded with LPWAN Technology and an intelligent low-power, wide area network based on the respective LPWAN protocol, cities can better measure quality and provide the type of data necessary to drive change for their citizens.



### HOW TO ?

NETOP air monitoring sensors embedded with LPWAN Technology are placed throughout the city. Sensors send periodic measurements of air quality data to a gateway. Gateway sends information to a network where the data is analyzed by an application server which can identify zones of concern and provide recommendations. Application server provides information regarding air quality levels throughout the city, including alerts and pollution patterns, via computer or mobile device

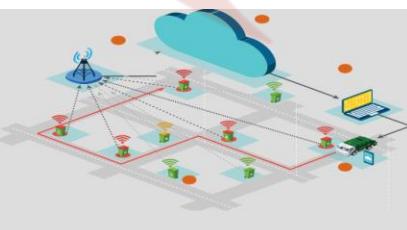


### WHERE ?

- Cities
- Municipalities
- Hospitals
- Factories
- Recycling facilities
- Bottle Banks
- Used Clothing Bins

### WHAT ?

By implementing sensors embedded with LPWAN Technology into waste bins and using an intelligent low-power, wide area network based on the respective LPWAN protocol, cities can significantly reduce their operational costs by streamlining their waste collection routes and deploying trash bins only where they are necessary.



### HOW TO ?

NETOP sensors embedded with LPWAN Technology are placed on waste bins. Sensors periodically report the fill rate of the waste bins. Gateway sends information to the network where the data is analyzed by an application server. Application server creates an optimized trash route indicating which waste bins need to be emptied. The optimized route is sent to drivers via computer or mobile, so that they only empty full waste bins.

## Air Pollution

## Waste Management

## Smart Parking



### WHERE ?

- Parking Areas
- Municipalities
- Shopping Malls
- Hospitals
- Airports
- Universities
- Private Sector

### WHAT ?

NETOP based sensors combined with credit-card enabled parking meters provide municipalities a total solution for expanding the payer base of a parking system. With a mobile app, enforcement officers are able to immediately see from anywhere which parking spaces are currently occupied and unpaid.



### HOW TO ?

While traditional urban monitoring systems have been prohibitively expensive for medium and small sized municipalities, NETOP LPWAN Technology provides an affordable solution that can increase municipal revenues and improve city services. City governments are always in search of better ways to optimize spending and increase revenue. With LPWAN Technology, municipalities are able to both lower the overall cost of infrastructure while advancing long-term technological goals.

## Smart Lighting



### WHERE ?

- Streets
- Highways
- Cities
- Municipalities
- Large campuses

### WHAT ?

Smart lighting adds intelligence and control to street lights to help reduce the largest energy expense of a typical city. Smart lighting provides remote lighting control that can better adjust the amount of time the lights are turned on to minimize energy costs without sacrificing public safety. Smart lighting can also significantly reduce street light maintenance costs and simplifies asset management. Smart street lights also can deliver the networking and power for other smart city applications. For example, in Los Angeles microphones are being integrated into streetlights at busy street intersections to pick up noises and instantly discern events such as car crashes.



### HOW TO ?

NETOP sensors embedded in each street light have the ability to control light functions. LPWAN Technology in the sensor connects the street light to a LPWAN-based gateway or base station. The gateway or base station aggregates data from all nearby street lights. Sensors for other smart city applications connect to the same gateway. The gateway or base station sends information to the Cloud where the data is analyzed by an application server and controls lighting. Server sends maintenance alerts for burnt out bulbs and other issues

## Precision Farming



### WHERE ?

- Farms
- Food Processing
- Cultivated Area

### WHAT ?

With precision farming, farmers can manage the inherent variability of a spread-out farm by gathering information on the status of the environment, their crops and animals on a hyper local basis to ensure its operating at full capacity.



### HOW TO ?

Soil, weather, plant and animal condition data is collected by sensors embedded with NETOP sensors using LPWAN Technology. Data from sensors are periodically sent to a LPWAN gateway or base station. LPWAN gateway or base station sends information to cloud server where the data is analyzed by Cloud-based application. Application sends data and alerts to farmer via mobile device or computer.

By implementing a precision farming solution comprised of sensors and gateways embedded with LPWAN Technology, and a low power wide area network based on the respective LPWAN protocol, farmers can help improve crop yields, animal health and farm operations.

## Cattle Tracking



### WHERE ?

- Animals
- Pets
- Farms
- Zoos

### WHAT ?

NETOP devices and wireless LPWAN Technology is making it easy and economical for ranchers to better track their cattle. From in-ear temperature sensors to GPS-free tracking, LPWAN based devices can effectively track and transmit data back to the Cloud, even over long distances.



### HOW TO ?

With NETOP LPWAN Technology, ranchers can track and detect anomalies in cattle behavior at any time. Data tracked remotely on wide- open cattle ranches can be collected and shared with a veterinarian anywhere in the world. The disease can be caught early and if necessary, cattle can be removed to prevent a spread of infection.

## Agriculture Food Processing



### WHERE ?

- Farms
- Food Processing
- Cultivated Area

### WHAT ?

Today's consumers put significant value on fresh, high quality food, which means farmers and food processors need to get agriculture products (crops, livestock, etc.) from farm to table very quickly and in a way that ensures food safety. Internet of things (IoT) systems for agriculture and food processing are aiding in this process. Once in the processing facility, additional sensors track the efficiency of the production and packing equipment and also any maintenance or repair needs.



### HOW TO ?

By implementing an agriculture and food processing IoT solution comprised of sensors and gateways embedded with NETOP LPWAN Technology and an intelligent low power, wide area network based on the respective LPWAN protocol, farmers and processors can build a network that helps delivering fresh food in a timely and efficient manner.

## Industrial Monitoring



### WHERE ?

- Alloy melting (automotive)
- Foil thermoforming (plastics)
- Glass syringe production (life sciences)

### WHAT ?

Industrial monitoring is a key element of industrial production processes. Alloy melting quality in the automotive industry, foil thermoforming in the plastic industry, or glass syringe production in the life science industry requires temperature measurement across the entire production line. An undetected anomaly in such production processes could cost millions of dollars.



### HOW TO ?

NETOP Technology enables connectivity, real-time analytics, reporting and additional functions such as geolocation. Sensors are placed throughout a manufacturing plant to monitor the values of different processes. Sensors periodically measure all needed values and send the data to the cloud.

By implementing an industrial temperature monitoring system comprised of sensors and gateways embedded with NETOP Technology and an intelligent low power wide area network based on the respective LPWAN protocol, manufacturers can more tightly control the quality of their production process.

## Asset Tracking



### WHERE ?

- Airports
- Seaports
- Harbors
- Warehouses
- Logistic Fields
- Container Depots
- Car Parking Fields
- Outdoor Forklift Tracking

### WHAT ?

NETOP Technology is making it easy and economical for smart supply chain and logistics to track valuable assets including vehicle fleets and on-ground equipment (i.e. trolleys, expensive tools). With Internet of Things (IoT) tracking for fleets and equipment, businesses can reduce cost by keeping these items in the field longer with better visibility for maintenance issues and close monitoring of real-time location.



### HOW TO ?

In an airport or a seaport, NETOP Technology gives managers an affordable window into all the information they require from the assets at work. Cloud based devices, sensors and gateways are an affordable way to capture, track and manage all the data generated by multiple movable assets in-motion.

NETOP devices capture usage and location data from the tracked assets and transmit the data wirelessly to cloud, where operations personnel can view it on web dashboards. This information is also accessible through a customer's existing equipment maintenance software, ensuring NETOP technologies fit into even the most customized situation.

## Order Button



### WHERE ?

- Web/Mobile order
- Waiter call
- Nurse call
- Send alarm
- Order anything

### WHAT ?

Connected Order Button is a easy click & get button which is working with LPWAN technology. Connected Order Button come with built in web service and can connect every platforms in seconds. Button shape can customize depends on project or needs.



### HOW TO ?

Data is collected by NETOP sensors embedded with LPWAN Technology. Data from the sensors is periodically sent to a LPWAN-based gateway. Gateway sends information to network server where the data is analyzed by an application server that can be located in offices Cloud Application server.

**And Many Other Solutions...**

# 6 Roadmap

DeloT Platform is an independent Project but It's %100 backed by Netop Technology  
Please check our milestones from our website  
Lets Start a New Journey!



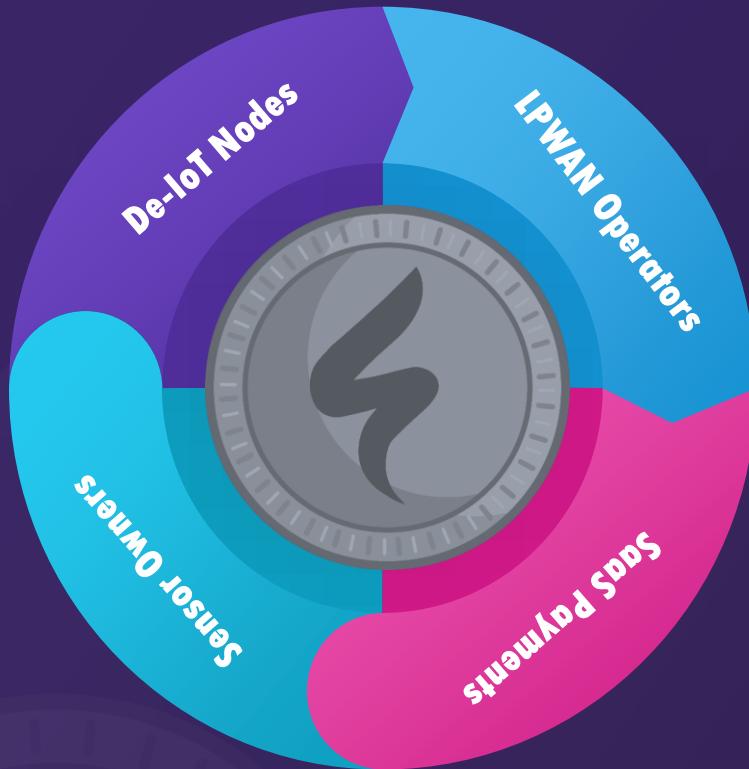
7

NOP

The Currency Of DeloT



# NOP Currency Usecases



- Nodes registered on the De-IoT Platform win awards for their successful transactions.
- Gateway owners who create coverage by hosting LPWAN gateways also win awards for the connectivity they provide.
- Users pay a fee for using the sensors they have registered on the De-IoT network and subscribed SaaS software applications.
- SaaS providers can be part of the De-IoT platform by hosting their software on the De-IoT network. They collect usage fees from users who subscribe to their applications.

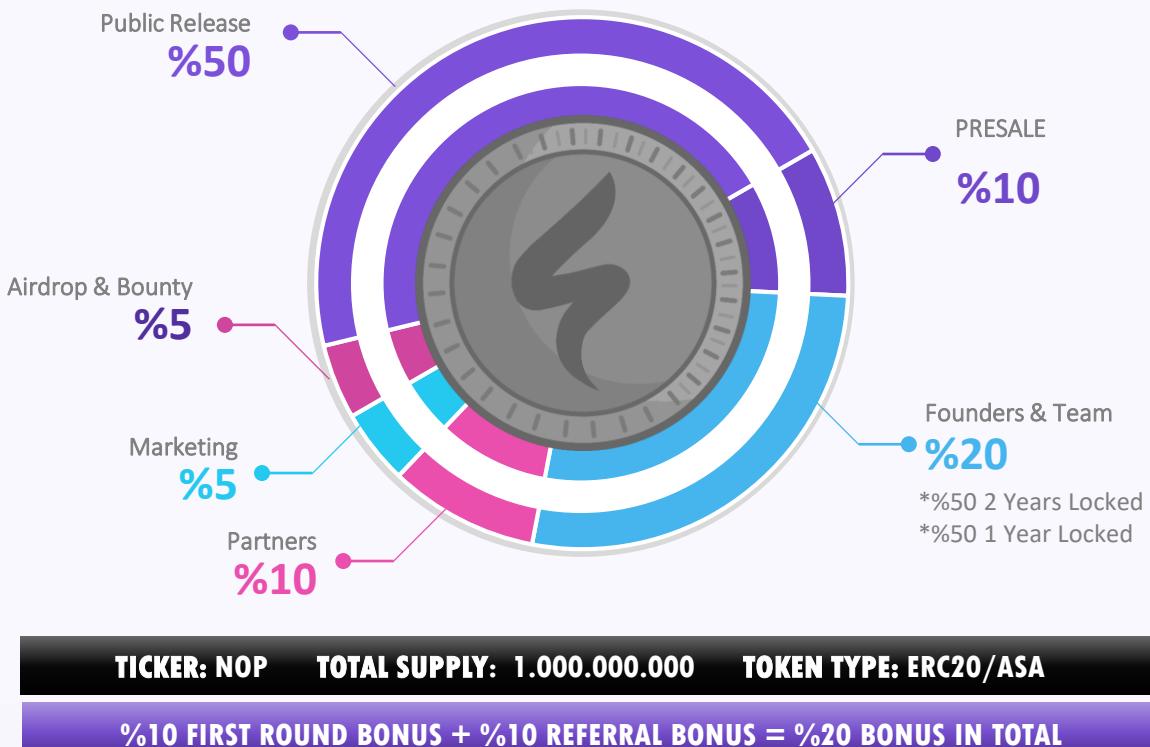
Money transfer in all these scenarios takes place with NOP cryptocurrency

NOP is the fuel of the De-IoT platform. Every transaction is rewarded or charged with NOP.

DeloT Platform

# NOP Distribution & Presale

NOP is currently available on Ethereum and Algorand Blockchains



## First Round PRESALE START

Dec 1, 2020  
09:00 GMT

## First Round PRESALE ENDS

Mar,01 2021  
00:00 GMT

## First Round NUMBER OF TOKENS ON PRESALE

25.000.000 NOP

## NOP PRESALE PRICE (1 St Round)

1 NOP = 0,025 USD

## ACCEPTABLE CURRENCIES

All Crypto Currencies  
via Cryptopayments  
Gateway

## MINIMUM TRANSACTION AMOUNT

1000 NOP = ~25 USD

## DeloT Platform

# Core Team

High-Tech Experts with Decades of Real-World Experience

deliot.network

**OLCAY  
TAYSI**

CEO & Lead  
Blockchain



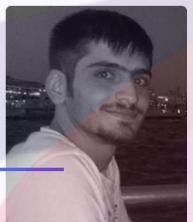
**RONY  
COHEN**  
Business Strategy  
Advisor



**JEEGAR  
SWALY**  
Board Advisor



**YASİN  
GORMEZ**  
Senior Blockchain  
Developer



**HALIT  
EMEN**  
IoT Developer



**ORPHEUS  
DORLAND**  
Board Advisor



**DARREN  
IZGI**  
Social Media  
Community Leader



- 5+ years in software development
- Vast Experience in backend development

- 20+ years in Telecom Field
- Vast experience in IoT Systems

- Vast experience in public relations

- 20+ years in IoT/M2M experiences
- 3 Successfull startup exit history

- 20+ years in development experience
- 15+ years experience on C-Level positions

- 5+ years in development experiences
- Vast experience in IoT field and LPWAN networks

# Disclaimer

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