IoT

технологии и тренды

КРОС 2019

22-24 МАЙ 2019

Что такое Internet of things

Интернет вещей, это:
- сеть физических предметов («вещей»)
- оснащённых встроенными технологиями для взаимодействия друг с другом или с внешней средой
- рассматривающая организацию таких сетей как явление, способное перестроить экономические и общественные процессы, исключающее из части действий и операций необходимость участия человека.

Что такое Internet of things

Интернет вещей, это:

- сеть предметов (вещей)
- вещи общаются друг с другом
- перестраиваются общественные и экономические процессы
- из взаимодействия исключается человек

Перспективы развития

Пилотные зоны в 19 городах РФ
Программа цифровой Казахстан
Решение от операторов большой тройки

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Постановка задачи

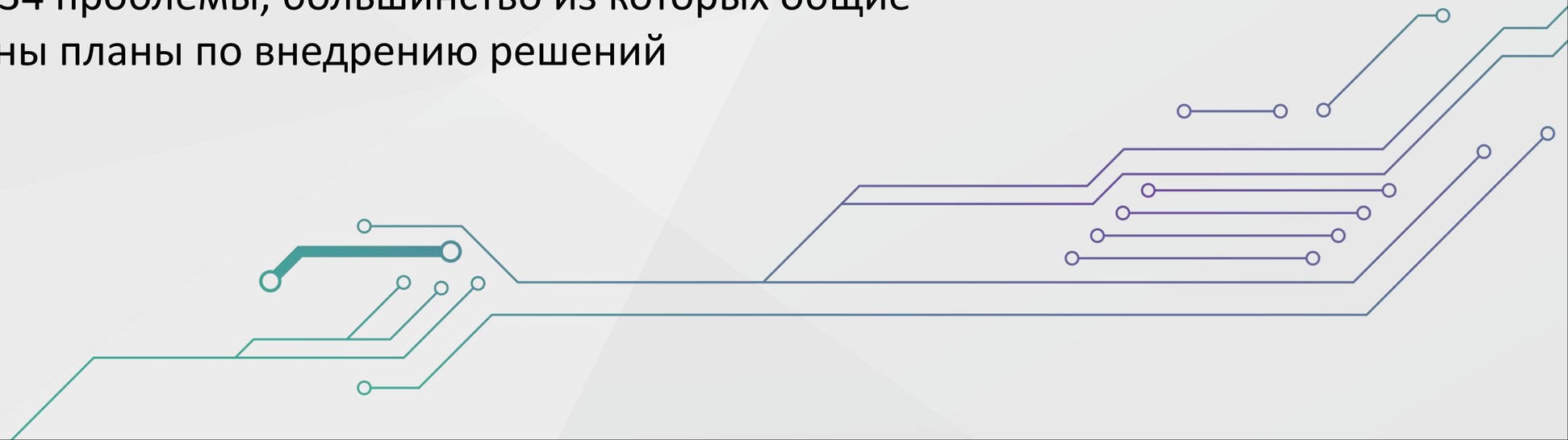
Поиск проблем на примере г.Остин

Подход:

- Собраны представители всех муниципалитетов города
- Сформировано 20+ рабочих групп
- Проведено более 100 рабочих совещаний

Результат:

- Выявлено 34 проблемы, большинство из которых общие
- Разработаны планы по внедрению решений



Сферы применения

a Electric Metering

In the electric metering market, utility companies typically require high data rates, frequent communication, and low latency. Since electric meters have a power source available, they do not require ultra-low power and long battery lifetime. Utility companies need real-time monitoring of the grid so they can make immediate decisions based on load, outages and other interruptions. Electric meters could be implemented with LoRaWAN as class C in order to have low latency, but due to the desired higher data rates and frequent communication, NB-IoT is a better fit for the application. Electric meters are also in stationary locations in mostly densely populated areas so it is easy for cellular companies to provide or guarantee coverage with NB-IoT.

b Precision Farming

For agriculture, very low cost sensors with a long battery lifetime are desired. The use of moisture, temperature, and alkalinity sensors can significantly improve the yield and reduce water consumption for one of the largest global markets. The sensors need to update their information a few times per hour as the conditions do not change radically. LoRa and LoRaWAN are ideal for these requirements. In addition, many farms do not have cellular coverage today and even more do not have 4G/LTE coverage so NB-IoT is not a viable option for the foreseeable future.

c Manufacturing Automation

Real time monitoring of factory machinery can prevent maintenance-related line down and can allow for remote control to improve efficiency. There are many different types of sensors or requirements in factory automation. Some applications need frequent communication and a guaranteed QoS so NB-IoT is a better fit than LoRa. Others need low cost sensors with long battery lifetime to track equipment, monitor status, and conditions which is a better fit for LoRa. Due to the wide variety of requirements for this segment both NB-IoT and LoRa will be utilized.

d Intelligent Building

Monitoring temperature/humidity, security, moisture, occupancy, HVAC, water flow, and electric plugs can provide building property managers with alerts and alarms direct to their mobile device to prevent damage and respond to requests instantly without having manually monitor in the building. The usage and cleaning of buildings can also be done more efficiently. The requirement for these sensors is low cost with a good battery lifetime. They do not require frequent communication or a guaranteed quality of service. Pico cell gateways, which can be placed in basements or underground parking garages to ensure coverage through 100 percent of the property, are also desired so LoRa is a better fit for this vertical.

e Retail Point of Sale Terminals (POS)

Point of sale (POS) systems must have a need for guaranteed quality of service (QoS) since they handle frequent communication. These systems are also powered so there is no constraint on battery lifetime. There is also a strong desire to minimize latency and turn-around time because long latency times can limit the number of transactions a store can make. Due to the QoS and frequent communication, NB-IoT is a better fit for this application.

f Pallet Tracking for Logistics

The key attributes to unlocking high volume in this market are cost and battery lifetime. Being able to track pallets to determine the location or condition of goods is highly desirable. Pallet tracking is a good example of a hybrid deployment solution. Logistics companies can have their own solution so they have a guaranteed coverage in their facilities. Low cost gateways can be easily deployed to cover sorting facilities and also deployed on vehicles as mobile gateways. A LoRaWAN public network can be leveraged when outside the facilities or when goods arrive at customer locations. 4G/LTE for NB-IoT might not be available for all logistic locations, which are typically in rural locations. LoRa also has the unique technical properties, which make the communication more reliable when moving at high speeds than the narrow band signals. Due to the low cost, long battery lifetime, and capability to have a private solution to guarantee network coverage in all sorting facilities LoRa is a better technology choice.

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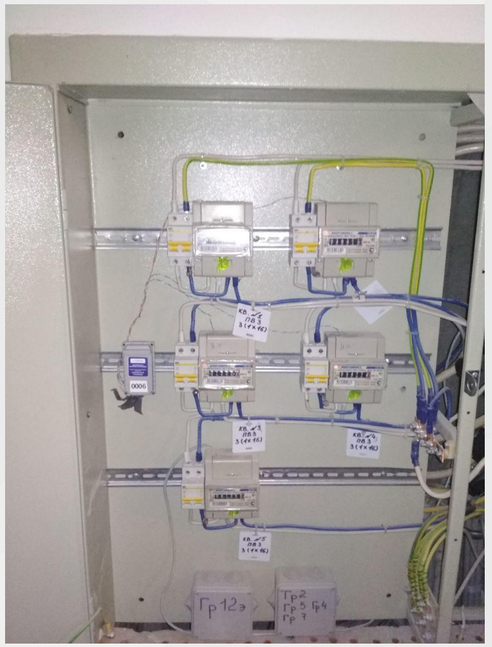
Диспетчеризация и мониторинг



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Управление освещением

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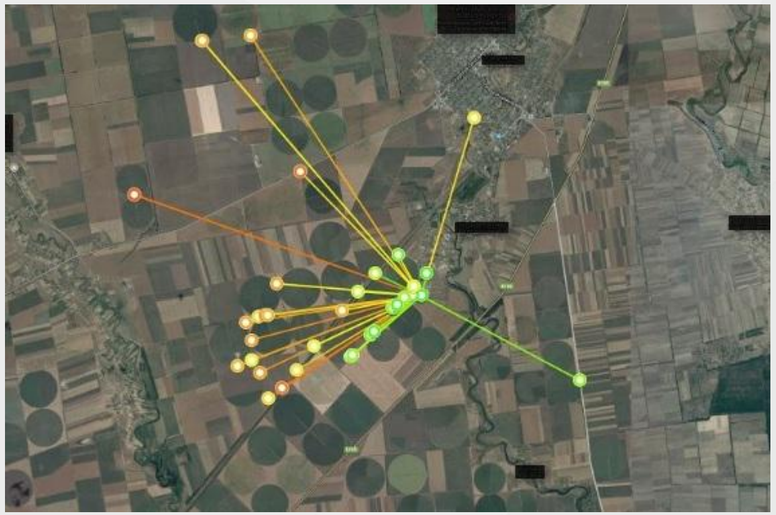
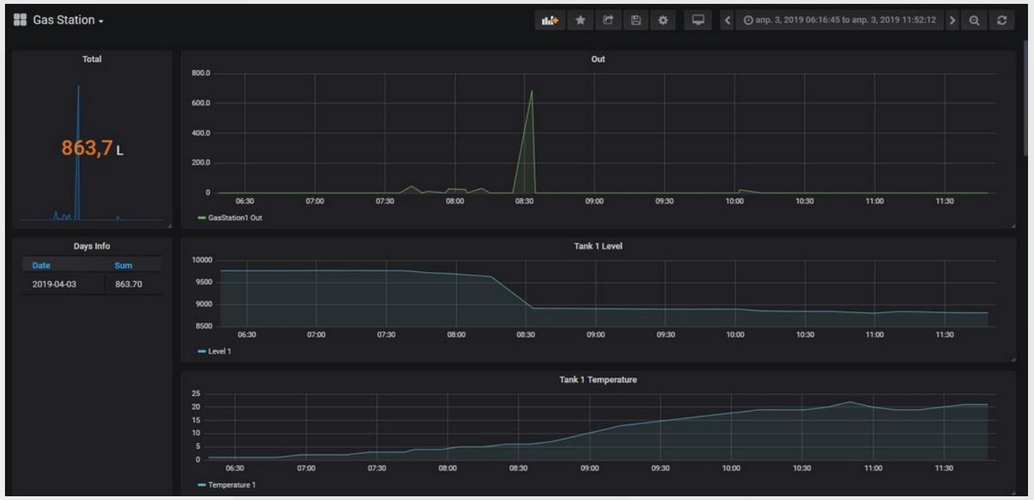
Сельское хозяйство





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Типовые бизнес-модели оператора в IoT

Диспетчеризация и мониторинг технических помещений

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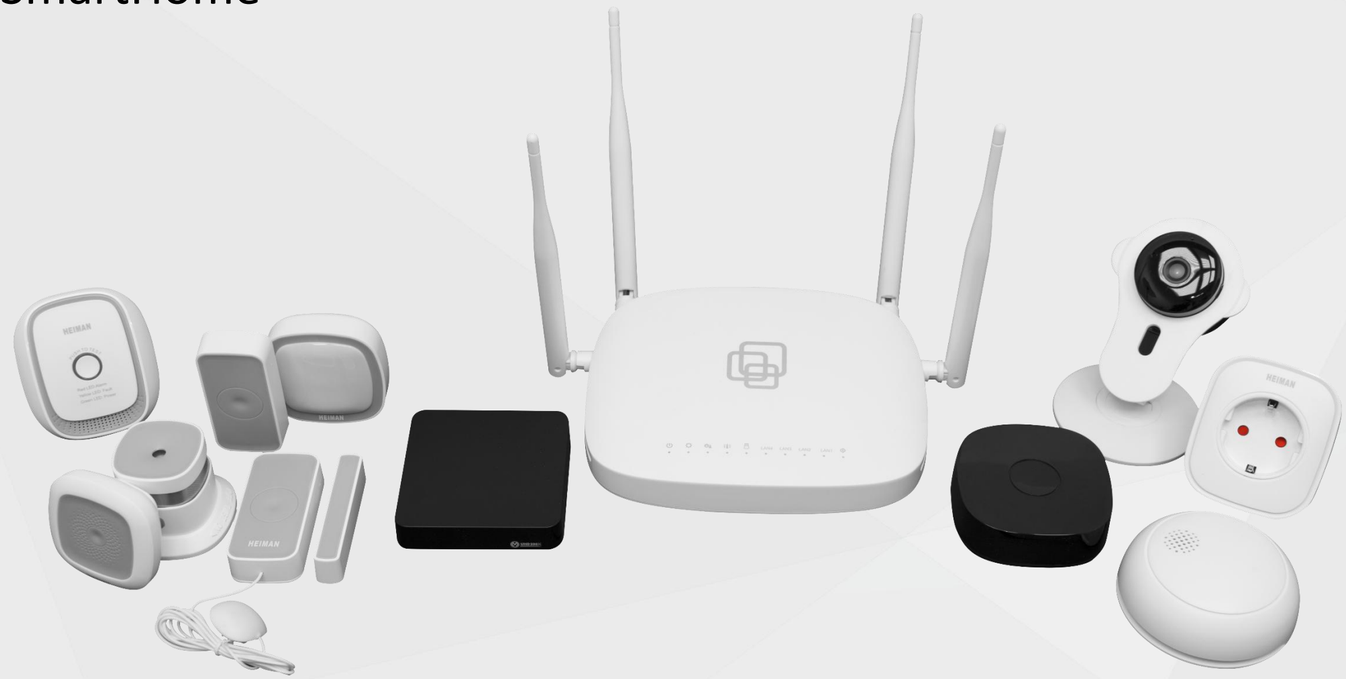
Типовые бизнес-модели оператора в IoT

Управление бизнес недвижимостью

Типовые бизнес-модели оператора в IoT

SmartHome



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Спасибо за внимание

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