

开源硬件的3大实用物联网开发工具

前瞻开发者技能与产品创新新维度

潘鑫磊

Q

什么是开源硬件？

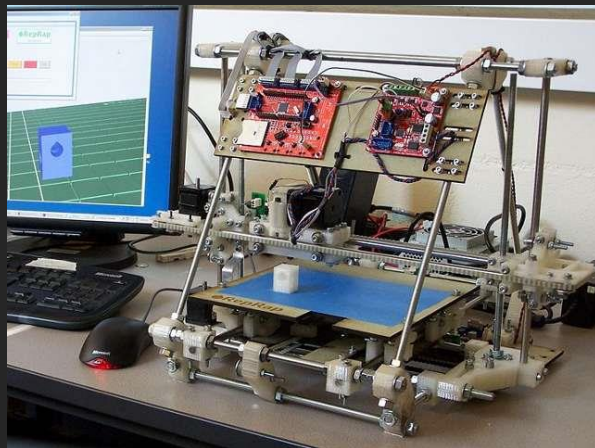


01 开源硬件项目



Arduino

- 开源电子平台
- 易用的软硬件



Reprap

- 开源3D打印机
- 常见的FDM打印机可打印塑料

01 开源硬件项目



ArduCopter

- 开源四轴飞行器项目



宠物喂食器

- 自制自动宠物喂食器
- 可编程低成本

01 开源硬件项目



萌！萌！萌！

01 为什么?

01

模块化设计

02

丰富的周边

03

社区支持

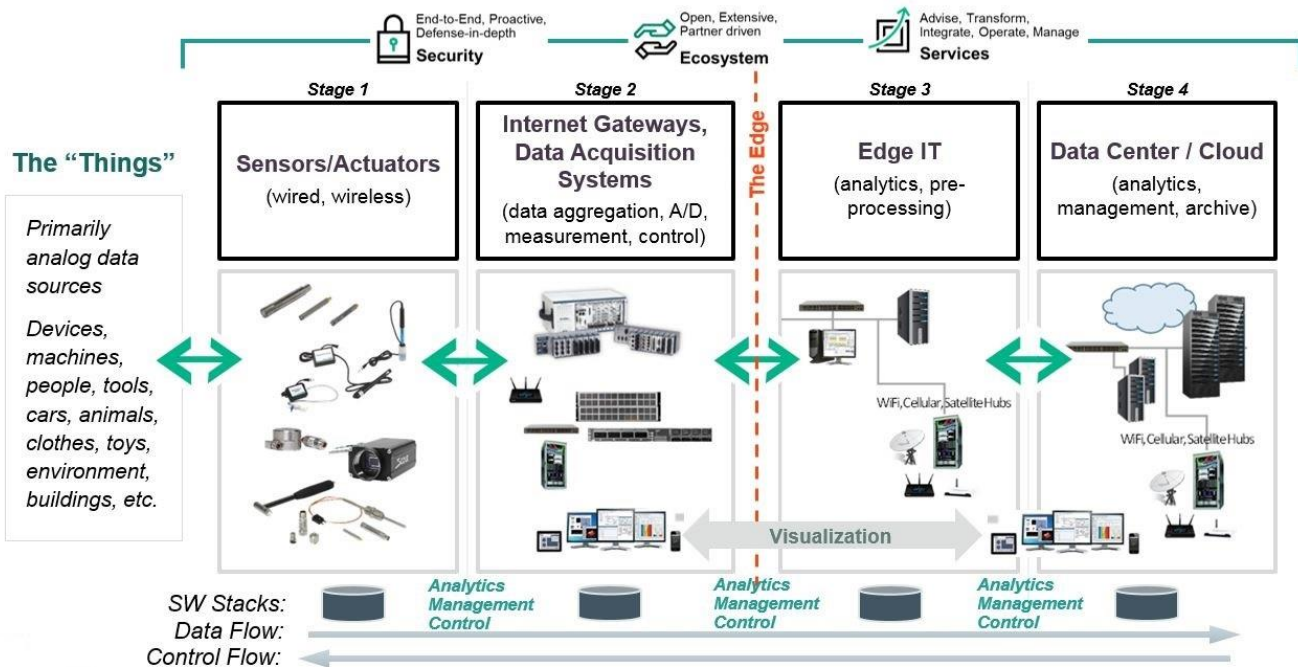
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了解开源硬件的意义？

02 物联网

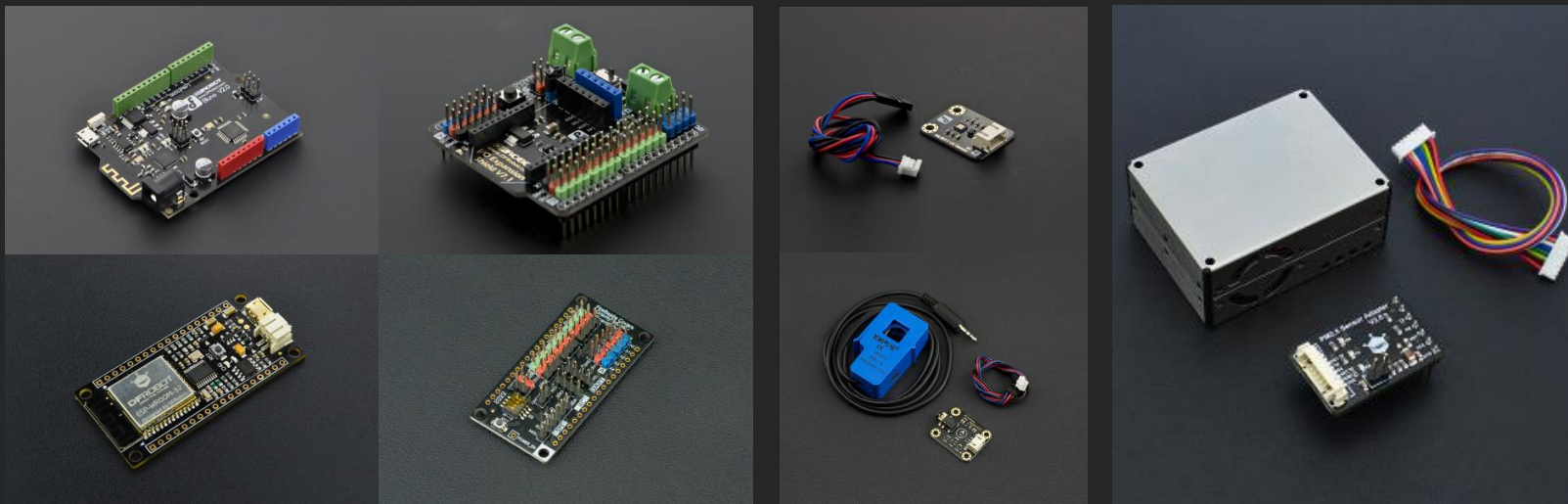


The 4 Stage IoT Solutions Architecture



02 物联网开发工具

控制器和传感/执行器



02 物联网开发工具

边缘设备



Raspberry Pi



LattePanda

02 物联网开发工具

套件



Microsoft Azure
IOT Developer Kit



KnowFlow
Water Quality Monitoring Kit

01 趋势

01

硬件对象化
API设计

02

丰富的教程
简单易用

03

社群协作

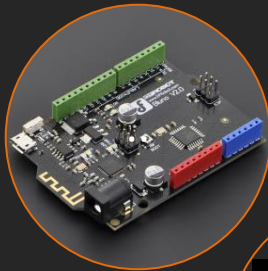
03 案例分析

Amazon Echo



03 案例分析

Smart LED



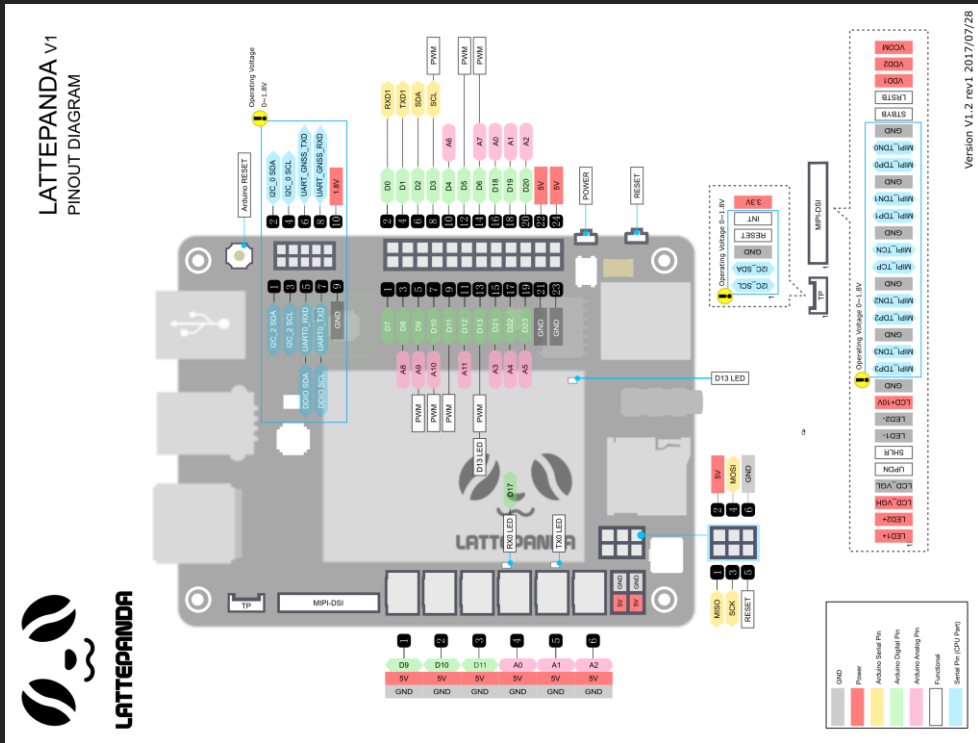
03 案例分析

Industry Application



Q

具体怎么用？



04 简单上手

硬件准备



LattePanda



Power & Cable



PIR Sensor

04 简单上手

基本信息



Standard 3-Pin Interface

It easily lets you label pins according to function and keep connecting sensors to the rest of the pins



Color Coded Pin Headers & Cable

Using color coded pin headers to represent Pin properties

04 简单上手

硬件连接



04 简单上手

C# 样例

```
1  using System;
2  using System.Collections.Generic;
3  using System.Linq;
4  using System.Text;
5  using System.Threading.Tasks;
6  using System.IO;
7  using System.Net;
8  using Newtonsoft.Json;
9  using Newtonsoft.Json.Linq;
10
11  namespace Digital_PIR_Sensor
12  {
13      class Program
14      {
15          static void Main(string[] args)
16          {
17              var client = new WebClient();
18              //Get all pins state
19              var url = "http://127.0.0.1:23456/read_all_pins";
20              var result = client.DownloadString(url);
21
22              //Turn String to JSON object
23              JsonReader reader = new JsonTextReader(new StringReader(result));
24              JObject resultObj = JObject.Parse(result);
25
26              //Get PIR sensor state, which connected with digital pin 9
27              Console.WriteLine(resultObj["data"]["9"]);
28
29              while (true) ;
30          }
31      }
32  }
33  |
```

04 简单上手

Javascript样例

```
1  var http = require('http');
2  var querystring = require('querystring');
3
4  var PIRPinNumber = 9;
5
6  var url = {
7    hostname: '127.0.0.1',//device ip
8    port: 23456,
9    path: '/read_all_pins',//read all pins
10   method: 'GET'
11 };
12
13 //send get request
14 var req = http.request(url,function(res){
15   res.setEncoding('utf8');
16   res.on('data',function(chunk){
17     var returnData = JSON.parse(chunk);
18     console.log('PIR Sensor State: %s',returnData.data[PIRPinNumber]);
19   });
20 });
21
22 req.on('error', function(e){
23   console.log('error' + e.message);
24 });
25 req.end();
26
```

Python样例

```
1  import urllib.request
2  import urllib.parse
3  import json
4
5  PIRPinNumber = "9"
6
7  # Get all pins state
8  # url = http://hostname:port/path
9  # hostname = 127.0.0.1 #device ip
10 # port = 23456
11 # path = /read_all_pins #read all pins
12 url = 'http://127.0.0.1:23456/read_all_pins'
13 req = urllib.request.urlopen(url)
14
15 # Turn String to JSON object
16 jsonString = req.read().decode('utf-8')
17 jsonObj = json.loads(jsonString)
18
19 #Get PIR sensor state,which connected with digital pin 9
20 print ('PIR Sensor State:',jsonObj["data"][PIRPinNumber])
21
```

05 协作

社区



创客空间线下社区



DF创客社区
www.DFRobot.com.cn

DF线上社区

05 协作

ODM和生产



感谢！

潘鑫磊