

21世纪高等学校规划教材 | 物联网



物联网专业英语教程

张强华 司爱侠 吕淑文 张千帆 编著



清华大学出版社

21世纪高等学校规划教材 | 物联网



物联网专业英语教程

张强华 司爱侠 吕淑文 张千帆 编著

清华大学出版社
北京

内 容 简 介

本书的目的在于切实提高物联网行业人士的专业英语能力。

以物联网专业应用实际为依据,采集难度适中、覆盖面广的实用性和前瞻性材料,组成单元。每个单元包括:Text A 及 Text B——这些课文包括了基础知识和基本概念;New Words——给出课文中出现的新词,读者由此可以积累基本专业词汇;Phrases——给出课文中的常用词组;Abbreviations——给出课文中出现的、业内人士必须掌握的缩略语;Exercises——针对课文练习,巩固学习效果;Reading Material——可进一步扩大读者的视野;参考答案——读者可对照检查学习效果;词汇总表——供读者记忆单词和长期查询之用。

本书既可作为高等院校的专业英语教材,优秀高职高专院校也可选用;还可作为培训班教材或供从业人员自学。

本书封面贴有清华大学出版社防伪标签,无标签者不得销售。

版权所有,侵权必究。侵权举报电话:010-62782989 13701121933

图书在版编目(CIP)数据

物联网专业英语教程 / 张强华等编著. —北京:清华大学出版社, 2015

21 世纪高等学校规划教材·物联网

ISBN 978-7-302-39361-0

I. ①物… II. ①张… III. ①互联网络-应用-英语-教材 ②智能技术-应用-英语-教材
IV. ①H31

中国版本图书馆 CIP 数据核字(2015)第 031615 号

责任编辑:魏江江 赵晓宁

封面设计:傅瑞学

责任校对:时翠兰

责任印制:宋 林

出版发行:清华大学出版社

网 址: <http://www.tup.com.cn>, <http://www.wqbook.com>

地 址:北京清华大学学研大厦 A 座 邮 编:100084

社总机:010-62770175 邮 购:010-62786544

投稿与读者服务:010-62776969, c-service@tup.tsinghua.edu.cn

质量反馈:010-62772015, zhiliang@tup.tsinghua.edu.cn

课 件 下 载: <http://www.tup.com.cn>, 010-62795951

印 装 者:北京国马印刷厂

经 销:全国新华书店

开 本:185mm×260mm

印 张:20

字 数:484 千字

版 次:2015 年 9 月第 1 版

印 次:2015 年 9 月第 1 次印刷

印 数:1~2000

定 价:39.50 元

产品编号:051667-01

出版说明

随着我国改革开放的进一步深化,高等教育也得到了快速发展,各地高校紧密结合地方经济建设发展需要,科学运用市场调节机制,加大了使用信息科学等现代科学技术提升、改造传统学科专业的投入力度,通过教育改革合理调整和配置了教育资源,优化了传统学科专业,积极为地方经济建设输送人才,为我国经济社会的快速、健康和可持续发展以及高等教育自身的改革发展做出了巨大贡献。但是,高等教育质量还需要进一步提高以适应经济社会发展的需要,不少高校的专业设置和结构不尽合理,教师队伍整体素质亟待提高,人才培养模式、教学内容和方法需要进一步转变,学生的实践能力和创新精神亟待加强。

教育部一直十分重视高等教育质量工作。2007年1月,教育部下发了《关于实施高等学校本科教学质量与教学改革工程的意见》,计划实施“高等学校本科教学质量与教学改革工程(简称‘质量工程’)”,通过专业结构调整、课程教材建设、实践教学改革、教学团队建设等多项内容,进一步深化高等学校教学改革,提高人才培养的能力和水平,更好地满足经济社会发展对高素质人才的需要。在贯彻和落实教育部“质量工程”的过程中,各地高校发挥师资力量强、办学经验丰富、教学资源充裕等优势,对其特色专业及特色课程(群)加以规划、整理和总结,更新教学内容、改革课程体系,建设了一大批内容新、体系新、方法新、手段新的特色课程。在此基础上,经教育部相关教学指导委员会专家的指导和建议,清华大学出版社在多个领域精选各高校的特色课程,分别规划出版系列教材,以配合“质量工程”的实施,满足各高校教学质量和教学改革的需要。

为了深入贯彻落实教育部《关于加强高等学校本科教学工作,提高教学质量的若干意见》精神,紧密配合教育部已经启动的“高等学校教学质量与教学改革工程精品课程建设工作”,在有关专家、教授的倡议和有关部门的大力支持下,我们组织并成立了“清华大学出版社教材编审委员会”(以下简称“编委会”),旨在配合教育部制定精品课程教材的出版规划,讨论并实施精品课程教材的编写与出版工作。“编委会”成员皆来自全国各类高等学校教学与科研第一线的骨干教师,其中许多教师为各校相关院、系主管教学的院长或系主任。

按照教育部的要求,“编委会”一致认为,精品课程的建设工作从开始就要坚持高标准、严要求,处于一个比较高的起点上;精品课程教材应该能够反映各高校教学改革与课程建设的需要,要有特色风格、有创新性(新体系、新内容、新手段、新思路,教材的内容体系有较高的科学创新、技术创新和理念创新的含量)、先进性(对原有的学科体系有实质性的改革和发展,顺应并符合21世纪教学发展的规律,代表并引领课程发展的趋势和方向)、示范性(教材所体现的课程体系具有较广泛的辐射性和示范性)和一定的前瞻性。教材由个人申报或各校推荐(通过所在高校的“编委会”成员推荐),经“编委会”认真评审,最后由清华大学出版社审定出版。

目前,针对计算机类和电子信息类相关专业成立了两个“编委会”,即“清华大学出版社计算机教材编审委员会”和“清华大学出版社电子信息教材编审委员会”。推出的特色精品教材包括:

(1) 21 世纪高等学校规划教材·计算机应用——高等学校各类专业,特别是非计算机专业的计算机应用类教材。

(2) 21 世纪高等学校规划教材·计算机科学与技术——高等学校计算机相关专业的教材。

(3) 21 世纪高等学校规划教材·电子信息——高等学校电子信息相关专业的教材。

(4) 21 世纪高等学校规划教材·软件工程——高等学校软件工程相关专业的教材。

(5) 21 世纪高等学校规划教材·信息管理与信息系统。

(6) 21 世纪高等学校规划教材·财经管理与应用。

(7) 21 世纪高等学校规划教材·电子商务。

(8) 21 世纪高等学校规划教材·物联网。

清华大学出版社经过三十多年的努力,在教材尤其是计算机和电子信息类专业教材出版方面树立了权威品牌,为我国的高等教育事业做出了重要贡献。清华版教材形成了技术准确、内容严谨的独特风格,这种风格将延续并反映在特色精品教材的建设中。

清华大学出版社教材编审委员会

联系人:魏江江

E-mail:weijj@tup.tsinghua.edu.cn

前言

物联网是继计算机、互联网之后信息产业发展的第三次浪潮，它通过智能感知、识别技术与普适计算，结合网络化应用，创造性地拓展和变革了众多行业。其影响的深度与广度都十分巨大，物联网人才需求旺盛。因此，我国数百所高校开设了相关专业。由于物联网各组成部分均处于高速发展之中，国际化特征尤为明显，从业人员必须提高专业英语水平，以便及时获得最新、最先进的专业知识。从某种意义上说，专业英语的水平决定了专业技能的水平。因此，几乎所有开设物联网专业的高校都开设了相应的专业英语课程。

我们以物联网专业应用实际为依据，采集难度适中、覆盖面广的实用性和前瞻性材料，组成单元。每个单元包括 Text、New Words、Phrases、Abbreviations、Notes、Exercises、Reading Material 等部分。其中，Text A 及 Text B 是课文，包括了基础知识和基本概念；New Words 给出课文中出现的新词，读者由此可以积累基本的专业词汇；Phrases 给出课文中的常用词组；Abbreviations 给出课文中出现的、业内人士必须掌握的缩略语；Exercises 提供针对课文的练习及扩展练习，以巩固学习效果、扩展能力；Reading Material 可进一步扩大读者的视野。附录 A 提供了参考答案，读者可对照检查学习效果，附录 B 提供了词汇总表，供读者记忆单词和长期查询之用。

我们提供的参考教案，可从清华大学出版社网站免费下载。

在使用本书的过程中，如有问题，都可以通过 E-mail 与我们交流。邮件标题请注明姓名及“物联网专业英语教程（清华大学版）”字样。E-mail 为 zqh3882355@163.com 或 zqh3882355@sina.com。

望大家不吝赐教，让我们共同努力，使本书成为一部“符合学生实际、切合行业实况、知识实用丰富、严谨开放创新”的优秀教材。

编者

2015 年 5 月

目录

Unit 1	1
Text A The Internet of Things: How It'll Revolutionise Your Devices	1
New Words	4
Phrases	6
Abbreviations	7
Exercises	7
Text B The Internet of Things -- This Is Where We're Going	9
New Words	12
Phrases	14
Exercises	15
Text C What Does the Internet of Things Mean for Today's Culture?	16
参考译文 Text A 物联网: 它会如何改变你的设备	18
Unit 2	21
Text A What is M2M?	21
New Words	23
Phrases	25
Abbreviations	25
Exercises	26
Text B How Machine to Machine Communication Works	28
New Words	31
Phrases	32
Exercises	33
Text C Machine To Machine	34
参考译文 Text A 什么是 M2M?	38
Unit 3	40
Text A How Smart Homes Work	40
New Words	45
Phrases	46
Abbreviations	47

Exercises	47
Text B What is GPS?	50
New Words	53
Phrases	54
Abbreviations	55
Exercises	55
Text C Smart Home and Technology	57
参考译文 Text A 智能家居如何工作	59
Unit 4	64
Text A Network Architecture	64
New Words	68
Phrases	69
Abbreviations	70
Exercises	70
Text B Network Topology	73
New Words	78
Phrases	79
Abbreviations	80
Exercises	80
Text C Internet Terms	82
参考译文 Text A 网络体系结构	85
Unit 5	88
Text A Networking Hardware	88
New Words	92
Phrases	93
Abbreviations	94
Exercises	94
Text B Network Switch	96
New Words	103
Phrases	104
Abbreviations	105
Exercises	106
Text C Router	107
参考译文 Text A 组网硬件	113
Unit 6	116
Text A Wireless Sensor Network	116

New Words	120
Phrases	121
Abbreviations	122
Exercises	123
Text B Applications of WSN	125
New Words	128
Phrases	130
Abbreviations	130
Exercises	131
Text C Sensor Web	132
参考译文 Text A 无线传感器网络	135
Unit 7	138
Text A How Wireless Networks Work	138
New Words	141
Phrases	142
Abbreviations	143
Exercises	143
Text B RFID	145
New Words	148
Phrases	149
Abbreviations	150
Exercises	150
Text C What is Wireless Internet Service?	152
参考译文 Text A 无线网络如何工作	155
Unit 8	157
Text A WiFi	157
New Words	163
Phrases	164
Abbreviations	165
Exercises	165
Text B How Bluetooth Works	167
New Words	171
Phrases	172
Abbreviations	173
Exercises	173
Text C Electronic Product Code (EPC)	174
参考译文 Text A WiFi	179

Unit 9	183
Text A Barcode	183
New Words	187
Phrases	189
Abbreviations	190
Exercises	190
Text B QR Code	193
New Words	201
Phrases	203
Abbreviations	203
Exercises	204
Text C Choosing the Right Barcode Scanner	205
参考译文 Text A 条形码	209
Unit 10	213
Text A What is ZigBee?	213
New Words	217
Phrases	219
Abbreviations	219
Exercises	219
Text B 3G and 4G	222
New Words	225
Phrases	227
Abbreviations	228
Exercises	228
Text C NFC	229
参考译文 Text A ZigBee 是什么?	233
附录 A 参考答案	236
Unit 1	236
Text A	236
Text B	237
Unit 2	239
Text A	239
Text B	240
Unit 3	242
Text A	242
Text B	243

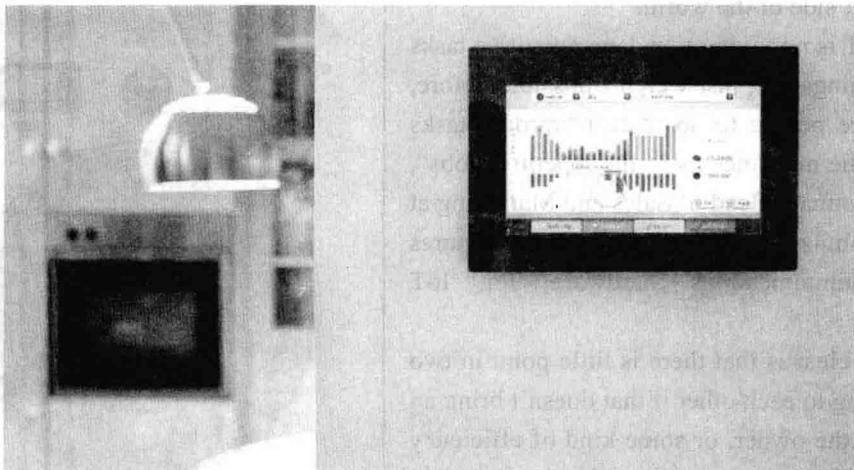
Unit 4.....	244
Text A	244
Text B	246
Unit 5.....	248
Text A	248
Text B	249
Unit 6.....	251
Text A	251
Text B	253
Unit 7.....	254
Text A	254
Text B	256
Unit 8.....	257
Text A	257
Text B	259
Unit 9.....	260
Text A	260
Text B	262
Unit 10.....	263
Text A	263
Text B	265
附录 B 词汇总表.....	267

Unit 1

Text A

The Internet of Things: How It'll Revolutionise Your Devices

Forget the cliché idea of fridge that sends you a text when you run out of milk. Try one that senses what's inside, chooses your next fortnight's meal plans, orders what it needs via an online supermarket, and syncs a delivery slot with your Gmail calendar.



Energy-saving whole home control is already on offer from the likes of Niko, but it's a pricey custom installation.

You might have a smart TV and you've almost certainly got a smartphone, perhaps even one that syncs content to an iPad, but such 'smart' devices are just the beginning of what's loosely termed the 'Internet of Things', or IoT for short. Also (perhaps more correctly) called 'machine to machine', the IoT isn't owned or controlled by any one group or company, it comprises no single idea, and it certainly isn't on any of our gadget wish lists. But it will change

all of our lives.

The uses for gadgets that communicate with each other on our behalf are huge and varied. How about a farmer that gets a text if any of his cows -- each sporting a wireless sensor¹ -- gets sick or pregnant. It already happens, and we're next: pacemakers that feed data through to a GP will be possible, and it could even send a text to relatives if the wearer falls ill.

More likely first uses include prescriptions that automatically get reordered and delivered without any need for trips to the doctors or pharmacy, and web-connected scales (WiFi models already exist) monitored remotely by a GP.

Smartphone apps are likely to provide an important window on the world of IoT, but tablets and other devices will also join in. The device itself is immaterial -- it's the internet connection that's critical.

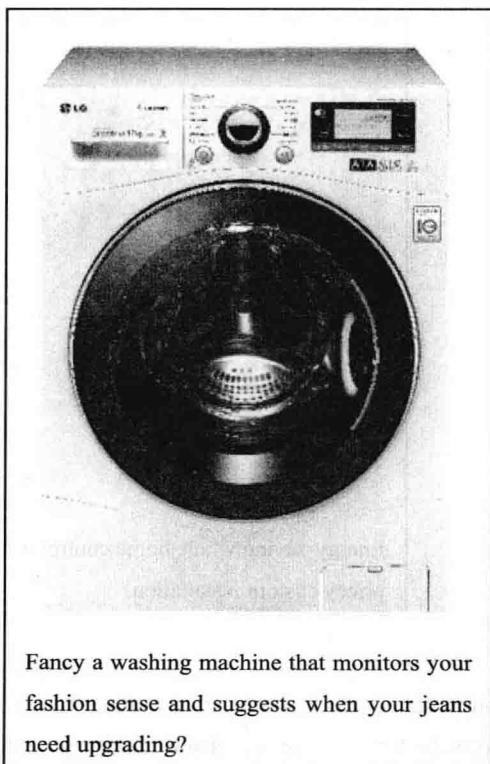
Some already use live traffic updates on sat nav devices, but in the future your alarm clock will let you sleep in if your train is delayed, rearrange a taxi, and even email your boss if you're stuck on a motorway.

If you have the money, it's already possible to have lights with motion sensors that track your movements, and blinds that slide up and down to help regulate temperature and lighting levels. The intercom that rings your mobile phone, whether you're home or not, has been around a while. Ditto the security camera you can monitor from the other side of the world.

"The IoT is removing mundane repetitive tasks or creating things that just weren't possible before, enabling more people to do more rewarding tasks and leaving the machines to do the repetitive jobs", says Grant Notman, Head of Sales and Marketing at Wood & Douglas, a company that manufactures wireless communications hardware for IoT applications.

What is clear is that there is little point in two gadgets talking to each other if that doesn't bring an advantage to the owner, or some kind of efficiency gain. The IoT on its own is nothing more than back-office admin.

"The consumer won't be interested in the Internet of Things, just as they are not interested in an Internet of Computers," says Jean-Paul Edwards, Head of Media Futures at global creative media agency Manning Gottlieb OMD London.



Fancy a washing machine that monitors your fashion sense and suggests when your jeans need upgrading?

¹ Any device that receives a signal or stimulus (as heat or pressure or light or motion etc.) and responds to it in a distinctive ([dis'tɪŋktɪv]adj. 与众不同的, 有特色的) manner.

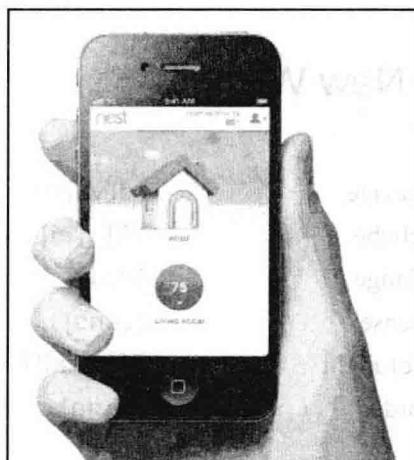
“They will be interested in what the IoT allows them to do or what it saves them from doing. Passive environmental monitoring, remote management and connectivity to everything will help us do what we used to do, but faster, cheaper and better.”

Could these catch on? The self repairing washing machine that can be fixed remotely or at least with only one visit by an engineer who has the correct parts, or the Nest Thermostat that learns when you are in or out to better control home heating.

“The technology is complex,” says Edwards of the latter, “but a claimed 20% saving on energy bills is a simple idea.” Self repairing gadgets? Now there’s a tasty idea that could take customer service, currently a frustrating blockage in the system, to new heights of efficiency.

Based around embedded RFID chips, barcodes and sensors, the Internet of Things is, at its most impressive, helping create smart cities. The aspects here are endless and begin with banal time saving activities in homes. However, the IoT is at its best when predicting human behaviour.

Is a city’s free bike renting scheme being used? Stick a RFID chip on the handlebars and someone can plot exactly who are riding these bikes, where those bikes go, and when. At night streetlights could switch on only when a car approaches -- thus saving electricity -- but more impressively, data could be collected to map urban travel patterns.



Designed to cut fuel bills, the Nest Thermostat can be adjusted from a PC or smartphone app.

There is a city where a joined-up IoT already exists, albeit in embryonic form. New Songdo City, 40 miles south of Seoul in South Korea, has a super-smart way to use 1500 acres of reclaimed land.

A Cisco-powered concept called U-Life is based on a city wide wired broadband network that allows the current 60,000 residents to use their smartphones, tablets and other touchscreen¹ devices to control their homes’ heating, lighting and air conditioning, with TelePresence devices throughout the city free video calling. Cars talk to roads, which talk to streetlights, while rubbish is sucked away via an underground network of pipes, without the need for garbage trucks.

The aim is to build a low energy, incredibly efficient city with private investment, and there’s good reason why it’s being seen as a global template; of the world’s seven billion population more than half now lives in cities, with 6.3 billion predicted to do so by 2050.

¹ A touchscreen is an electronic visual display that can detect the presence ([ˈpreznəs]n.发生, 存在) and location of a touch within the display area. The term generally refers to touching the display of the device with a finger or hand. Touchscreens can also sense other passive objects, such as a stylus ([ˈstailəs]n.尖笔).

“The M2M market is growing rapidly and unlike any other, it is one technology that can surpass human interaction,” says Macario Namie, VP of marketing at Jasper Wireless, which is working with mobile operators such as O2 in the UK and AT&T in the US on IoT communications. “Its limitless reach means it’s set to be prevalent in connecting future societies.”

That ‘double whammy’ of population growth and ever-increasing urbanisation means that the IoT has the job of streamlining our cities, but in theory it will allow each of us to dispense with a lot of daily chores. Of course, that’s exactly what is said about the home computer.

New Words

device	[di'vais]	n. 装置, 设备
cliché	['kli:ʃei]	n. 口头禅, 陈词滥调
fridge	[fridʒ]	n. 冰箱
sense	[sens]	vt. 感知
fortnight	['fɔ:tnait]	n. 两星期
order	['ɔ:də]	n. 次序, 顺序, 命令, 订购, 订单 vt. 命令, 订购, 定制
supermarket	['sju:pə.mɑ:kit]	n. 超级市场
sync	[sɪŋk]	n. 同时, 同步
delivery	[di'livəri]	n. 递送, 交付, 交货
calendar	['kælɪndə]	n. 日历
smart	[smɑ:t]	adj. 智能的, 敏捷的
smartphone	['smɑ:tfəun]	n. 智能电话
content	['kɒntent]	n. 内容
term	[tə:m]	vt. 把……称为; 把……叫作
comprise	[kəm'praiz]	vt. 包含, 包括; 由……组成; 由……构成
control	[kən'trəul]	n.& vt. 控制, 支配, 管理
gadget	['gædʒɪt]	n. 小器具, 小配件, 小玩意
huge	[hju:dʒ]	adj. 巨大的, 极大的, 无限的
varied	['væərɪd]	adj. 各式各样的
sport	[spɔ:t]	vt. 佩戴
wireless	['waiələs]	adj. 无线的
pregnant	['pregnənt]	adj. 怀孕
pacemaker	['peɪsmekə]	n. 领跑者, 带头人
wearer	['weərə]	n. 穿用者, 佩戴者

relative	['relətiv]	n. 亲戚
prescription	[pri'skripʃən]	n. 指示, 规定
automatically	[ɔ:tə'mætikli]	adv. 自动地, 机械地
pharmacy	['fɑ:məsi]	n. 药剂学, 配药业, 制药业
scale	[skeil]	n. 刻度, 衡量, 比例
monitor	['mɒnitə]	vt. 监控 n. 监视器, 监控器
remotely	[ri'məutli]	adv. 遥远地, 偏僻地
app (=application)	[æpli'keiʃən]	n. 应用
immaterial	[imə'tiəriəl]	adj. 非实质的
critical	['kritikəl]	adj. 评论的, 危急的, 临界的
delay	[di'lei]	v. & n. 耽搁, 延迟, 迟滞
rearrange	[ri:ə'reindʒ]	vt. 再排列, 重新安排
motorway	['məutəwei]	n. 汽车高速公路
blind	[blaind]	adj. 瞎的, 盲目的 vt. 使失明, 缺乏眼光或判断力
slide	[slaid]	v. (使) 滑动, (使) 滑行
regulate	['regjuleit]	vt. 控制, 调节, 校准
intercom	['intə'kɒm]	n. 内部通信联络系统
ditto	['ditəu]	n. 同上, 同上符号, 很相似的东西 vt. 重复 adv. 与前同地
mundane	['mʌndein]	adj. 世界的, 世俗的, 平凡的
repetitive	[ri'petitiv]	adj. 重复的, 反复性的
manufacture	[mænju'fæktʃən]	vt. 制造, 加工 n. 制造, 制造业, 产品
complex	['kɒmpleks]	adj. 复杂的, 合成的, 综合的 n. 联合体
tasty	['teisti]	adj. 有品味的; 有趣的
frustrate	[frʌs'treit]	v. 挫败, 阻挠, 阻止
frustrating	[frʌs'treitin]	adj. 令人灰心的; 使人沮丧的; 让人懊恼的
blockage	['blɒkidʒ]	n. 妨碍, 封锁
embed	[im'bed]	vt. 使插入, 使嵌入, 深留, 嵌入
embedded	[em'bedid]	adj. 嵌入的, 嵌入式
chip	[tʃip]	n. 芯片
handlebar	['hændlbɑ:]	n. 把手
plot	[plɒt]	vt. 标绘出, 绘制……的图表 (或平面图)
barcode	['bɑ:kəud]	n. 条形码
endless	['endlis]	adj. 无止境的, 无穷的

pattern	['pætən]	n. 式样, 模式, 图案 vt. 模仿, 仿造
albeit	[ɔ:l'bi:it]	conj. 尽管; 即使
broadband	['brɔ:dbænd]	n. 宽带
network	['netwɜ:k]	n. 网络
touchscreen	['tʌtʃskri:n]	n. 触摸屏
investment	[in'vestmənt]	n. 投资
template	['templɪt]	n. 模板 (=templet)
population	[,pɒpjə'leɪʃən]	n. 人口
predict	[pri'dikt]	vt. 预言, 预测
surpass	[sə:'pɑ:s]	vt. 远远超出
interaction	[,ɪntər'ækʃən]	n. 交互
prevalent	['prevələnt]	adj. 普遍的, 流行的
urbanisation	['ʌ:bənaɪzeɪʃən]	n. 都市化
chore	[tʃɔ:]	n. 家务杂事

Phrases

Internet of Things (IoT)	物联网
run out of	用完, 耗尽
meal plan	用餐计划
delivery slot	交货时间段; 交货槽, 输送槽
for short	简称, 缩写
machine to machine	机器对机器
communicate with ...	与……通信, 与……沟通
on one's behalf ...	为……的利益, 代表
get sick	生病
be likely to	可能; 倾向于
sat nav	卫星导航
sleep in	多睡一会
motion sensor	运动传感器
be stuck	卡住了, 动不了; 被困住了, 被难住了
up and down	上下地, 到处, 前前后后
on its own	本身
nothing more than	仅仅, 只不过
back-office admin	后台管理
be interested in	对……感兴趣