

ARFID COMPANY

TOTAG

温度记录标签

ARFID

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T°TAG SOLOTION

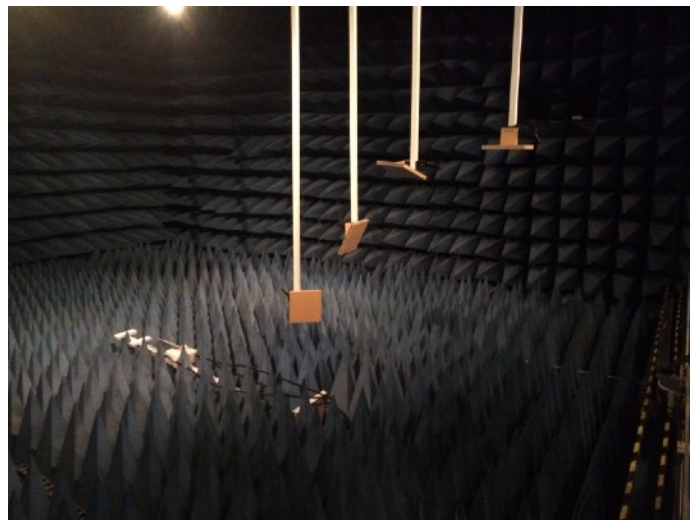
Prepared by
PDD/PM ALEX LEUNG
Contents Responsible if other than preparer
Approved by
www.ARFID.co
www.ARFID.eu

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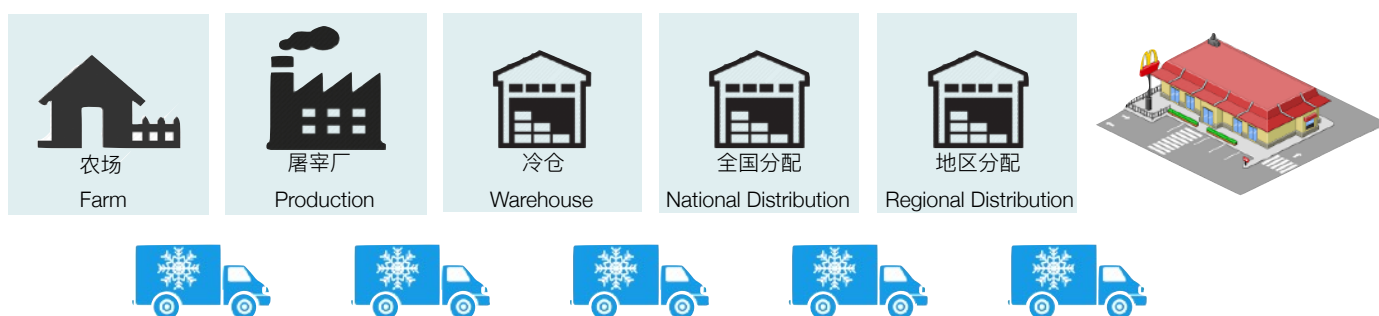
Revision
PA1

T°TAG

冷链温度记录标签及系统



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“EACH LINK IN THE COLD CHAIN MUST MAINTAIN THE SAME LEVEL OF INTEGRITY FOR THE CUSTOMER TO RECEIVE A SATISFACTORY PRODUCT. A SINGLE BREAKDOWN IN THE CHAIN CAN RESULT IN CATASTROPHIC LOSSES OF PRODUCTS.”

“ 冷链上的每一个环节都必须保持相同级别温度储存以及跟踪记录, 以便客户获得满意的产品。冷链中的一个过失都可能导致灾难性损失。”

PROBLEM问题:

TEMPERATURE
LOGGING IS
FRAGMENTED!

无温度记录或温度记录是碎片的!



明明是冷链运输，为何变质了？ Why Products go bad in cold chain?



农场
Farm



屠宰厂
Production



冷仓
Warehouse



全国分配
National Distribution



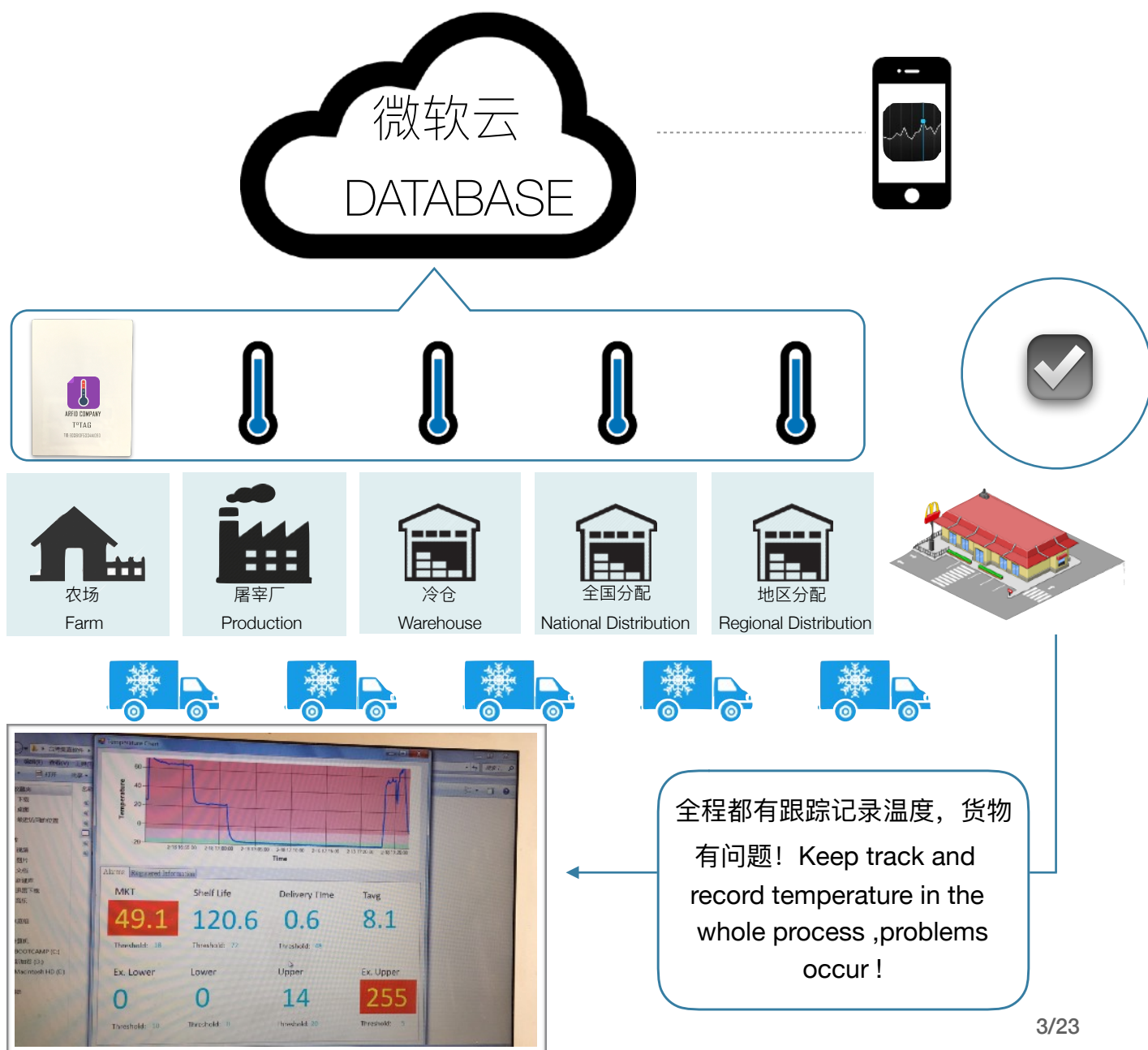
地区分配
Regional Distribution



SOLUTION:

@RFID PROVIDES A COMPLETE TEMPERATURE LOG FROM PRODUCTION TO CONSUMPTION.

我们提供 **完整的一次性** 温度记录标签方案！



OUR TEMPERATURE RECORD TAG:

我们的温度记录标签



- 监控整个冷链物流的温度，验证货物是否保存在限定温度区间。
Monitoring temperature profiles during shipments, Cold chain process verification
- 内嵌时钟，监控冷链运输时间（保质期）。
Embedded clock, monitoring cold chain transport time
- 针对疫苗、生物制剂、医药、新鲜食品和其他对储存温度严格要求的产品。
Ideal for vaccines, biologicals, medicine and other temperature sensitive products, such as fresh food
- 下一代传感器记录标签：可以记录湿度、光、压力、冲击和损害等，如水果成熟气体传感器。
Next generation sensors: Can record humidity, light, pressure, shock and tamper protection, gas sensor.



SYSTEM OVERVIEW 系统概述



– TMS DATABASE AND TMS APP

TMS 云端数据库、WEB管理端和TMS APP



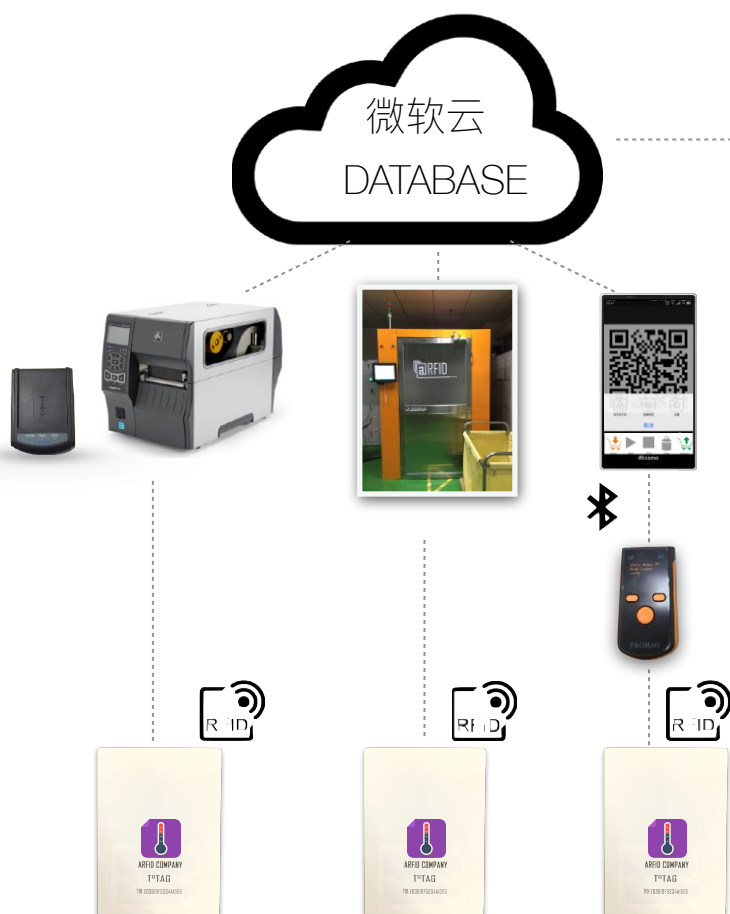


Temperature Record Tag has only one highly integrated chip, include UHF RFID Wireless communication, temperature sensor, memory, clock. other parts battery and antenna .

温度标签采用UHF RFID通讯制式，包含带有温度传感单元的微处理芯片，内存，电池，天线和时钟，高度集成在一颗芯片IC内。

- Microchip : Microchip with temperature sensors: The sensors operating temperature range is -25°C to 50°C, Accuracy $\pm 0.10^{\circ}\text{C}$ (with an accuracy of $\pm 0.50^{\circ}\text{C}$ at the calibrated temperature).
- Sensor: The temperature sensor have calibration certification from Teknologisk Institutt, ISO 175025.
- Memory: 1Kb, Memory can record up to 739 records..
- Battery: The battery can log for more than 180 days, and contains no toxic substances. Environmental protection battery, can discard. In accordance with air transport law.
- Clock: The Record Tag has a built-in real time clock which enables temperature logging in intervals between 1 seconds and 9 hours.
- UHF RFID has read/write distance of 0.5 to 10 meters depending on Reader.
- Layout: The Record Tag is IP68 dust and water proof, and its physical dimensions are 54 mm. width x 85,6 mm. height x 1.3 – 1.7 mm thickness. The Tag has printable surface and adhesive with release paper on the back.
- 芯片: 芯片与温度传感器: 传感器工作温度范围为-25°C到50°C, 精度 $\pm 1^{\circ}\text{C}$, 校正后区间精度为 $\pm 0.50^{\circ}\text{C}$ (2 ~8°C, -16°C ~ -25°C) 。
- 传感器: 温度传感器校准符合 certification 来自于 Teknologisk Institutt, 符合 ISO 175025 标准。
- 记忆体: 存储容量是根据客户的需求定制，默认1Kb，可以存储739笔温度。
- 可快速群记录、群访问上上限、上限、下限、下下限，快速找到超过温度限定的标签。可分别记录255次超出次数。
- 纸电池不含有毒物质，环保可抛弃，无RFID信号时，不发射无线电信号符合航空运输法。使用寿命随记录 **温度的间隔时间不等*** 。
- 时钟: 传感器标签有一个内置的实时时钟，温度记录间隔1秒至9小时，并记录开始时间。记录、报警保质期。
- 超高频射频识别已读/写0.2米到10米的距离取决于读写器。
- 布局: 传感器标签IP68防尘和防水, 及其物理尺寸54 mm. 宽度x 85.6 mm. 高度x 1.3 - 1.7毫米厚度。标签包含可打印的表面和离型纸的背面。

电池寿命 Battery Life		
Interv als	Life (Day)	Pow ($\mu\text{A} / \text{h}$)
2min	4.55	110
5min	11.06	45.2
10min	21.19	23.6
15min	30.49	16.3



The database, named TMS Online, keeps track of all Temperature Record Tags, their owners and users, as well as information about all events in Temperature Record Tags lifecycle. The database provide the client with overview of all products in the cold chain, and their temperatures during transport and storage.

TMS Online WEB云端管理软件，跟踪所有传感器的标签，为他们的系统用户,纪录产品生命周期中所有事件信息。数据库为客户端提供冷链中所有产品的概述,他们的温度在运输和存储的情况。

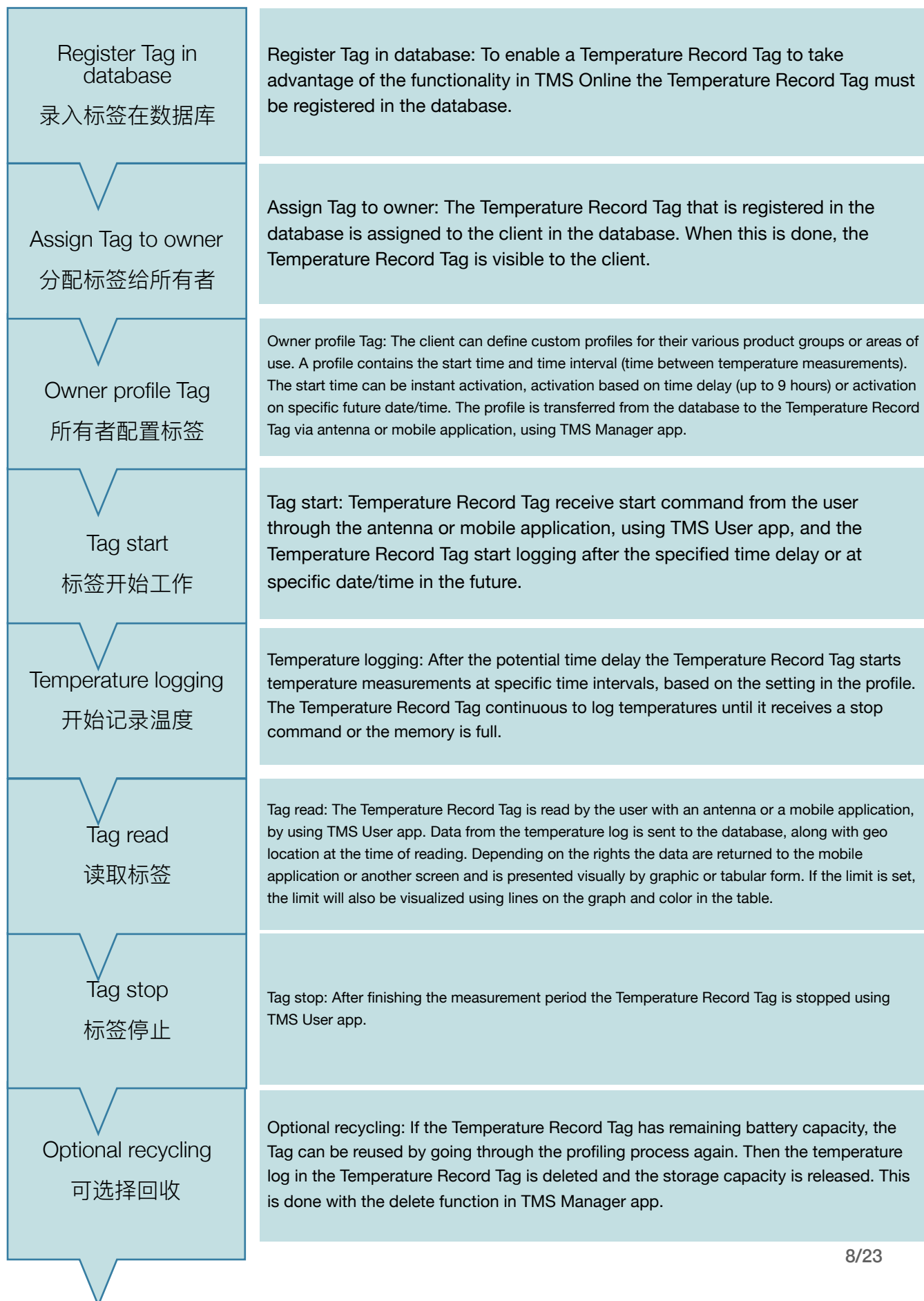
The mobile apps are developed for both Android and iOS platforms. The apps are used for profiling Temperature Record Tags with setting, start/read/stop temperature logs, and display temperature graphs and tables.

The app is based on two user levels, user and manager. On manager level sensors Tags are profiled with setting regarding start time and interval between temperature measurements. The profiling is done based on predefined profiles in TMS Online. One user level the Temperature Record Tags can be started, read and stopped. TMS Online is updated with all these incidents.

移动应用开发的Android和iOS平台。应用程序是用于分析传感器标签设置,启动/阅读/停止温度记录,并显示温度的图和表。

这个应用程序是基于两个用户级别,用户和管理员。管理员级别可以在传感器标签上设置开始时间和温度测量的时间间隔。分析数据基于预定义的配置文件在TMS Online云端管理软件。用户级别可以设置传感器标签开始,阅读和停止。TMS Online 云端软件在线更新所有发生过的事件。

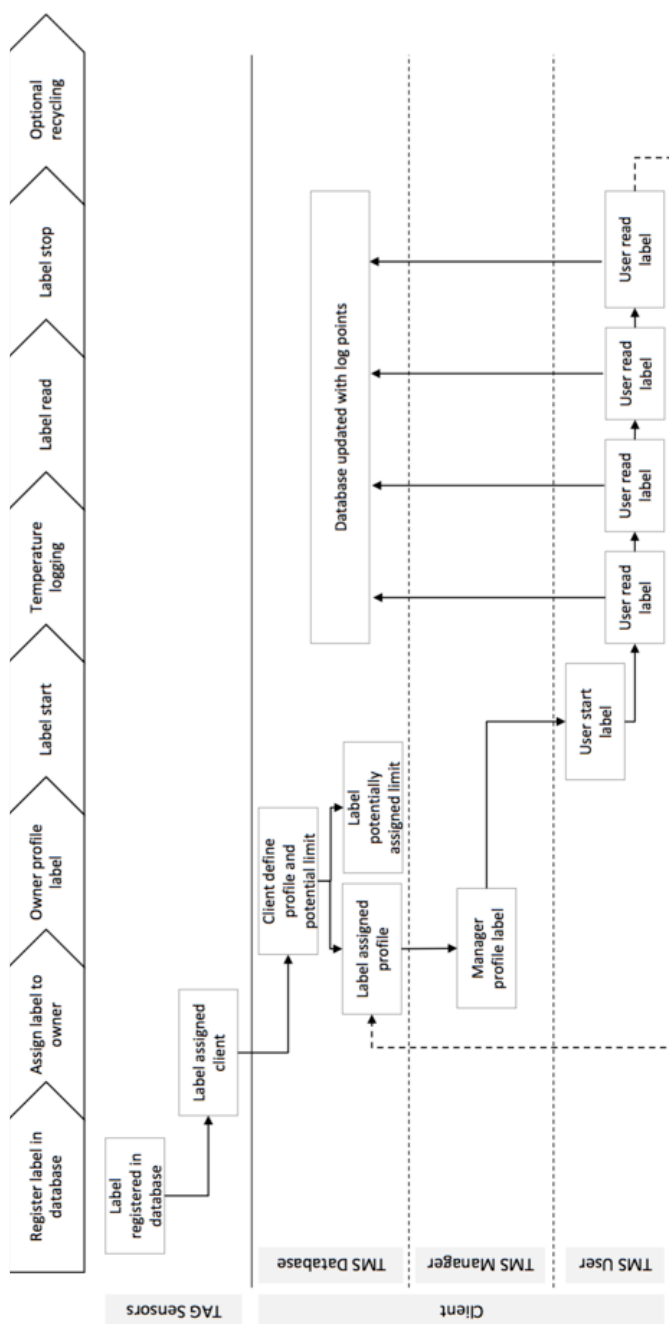






SYSTEM OVERVIEW

系统架构



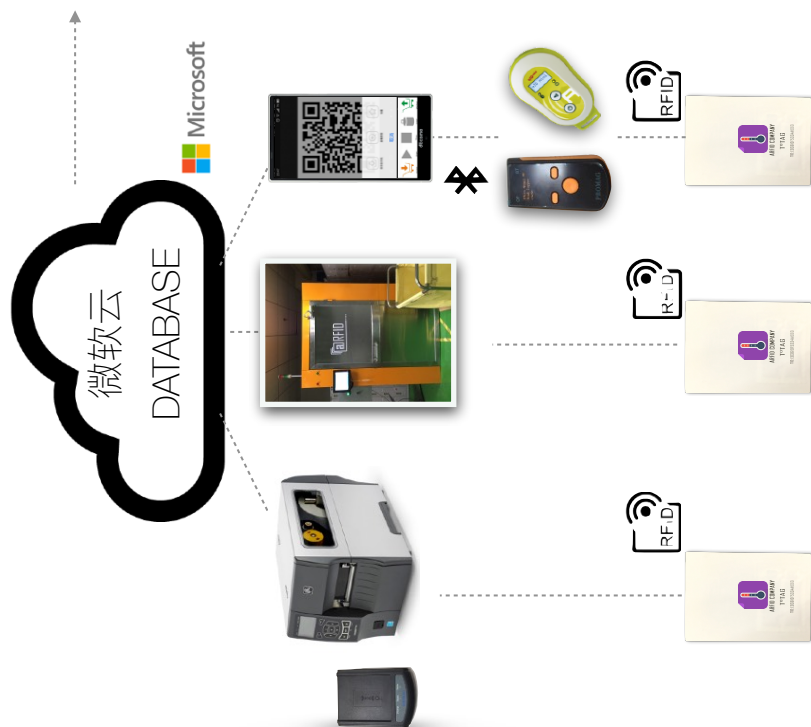


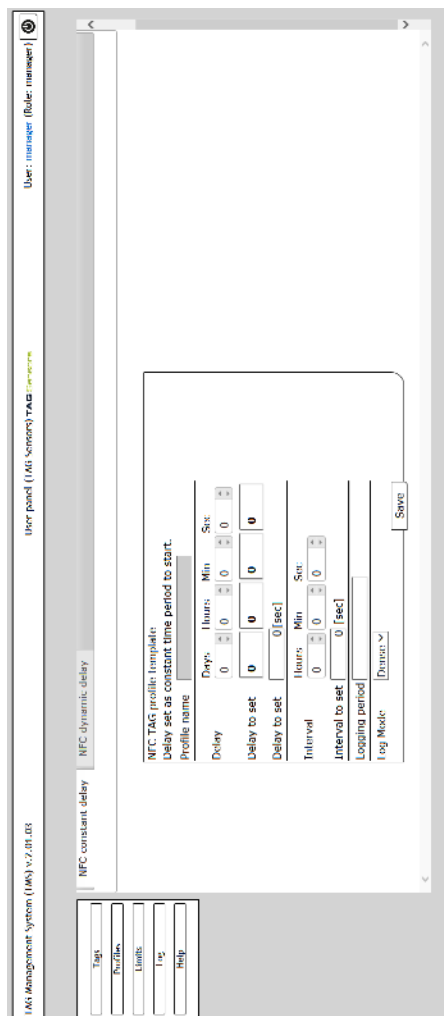
TAC Management System (TMS) v.2.01.00 User panel (TAC Sensors) TAG Microsoft User: manager (Role: manager)

Tags No.	TID	Client	Type	Description	Limits	Life cycle	Action
1	100002-400001-C204	TAC Sensors	2	Senior Tag 201	100002-400001-C204	100002-400001-C204	Search
2	100002-400001-C205	TAC Sensors	2	Senior Tag 201	100002-400001-C205	100002-400001-C205	Search
3	100002-400001-C206	TAC Sensors	2	Senior Tag 201	100002-400001-C206	100002-400001-C206	Search
4	100002-400001-C207	TAC Sensors	2	Senior Tag 201	100002-400001-C207	100002-400001-C207	Search
5	100002-400001-C208	TAC Sensors	2	Senior Tag 201	100002-400001-C208	100002-400001-C208	Search
6	100002-400001-C209	TAC Sensors	2	Senior Tag 201	100002-400001-C209	100002-400001-C209	Search
7	100002-400001-C210	TAC Sensors	2	Senior Tag 201	100002-400001-C210	100002-400001-C210	Search
8	100002-400001-C211	TAC Sensors	2	Senior Tag 201	100002-400001-C211	100002-400001-C211	Search
9	100002-400001-C212	TAC Sensors	2	Senior Tag 201	100002-400001-C212	100002-400001-C212	Search
10	100002-400001-C213	TAC Sensors	2	Senior Tag 201	100002-400001-C213	100002-400001-C213	Search
11	100002-400001-C214	TAC Sensors	2	Senior Tag 201	100002-400001-C214	100002-400001-C214	Search
12	100002-400001-C215	TAC Sensors	2	Senior Tag 201	100002-400001-C215	100002-400001-C215	Search
13	100002-400001-C216	TAC Sensors	2	Senior Tag 201	100002-400001-C216	100002-400001-C216	Search
14	100002-400001-C217	TAC Sensors	2	Senior Tag 201	100002-400001-C217	100002-400001-C217	Search
15	100002-400001-C218	TAC Sensors	2	Senior Tag 201	100002-400001-C218	100002-400001-C218	Search
16	100002-400001-C219	TAC Sensors	2	Senior Tag 201	100002-400001-C219	100002-400001-C219	Search
17	100002-400001-C220	TAC Sensors	2	Senior Tag 201	100002-400001-C220	100002-400001-C220	Search
18	100002-400001-C221	TAC Sensors	2	Senior Tag 201	100002-400001-C221	100002-400001-C221	Search
19	100002-400001-C222	TAC Sensors	2	Senior Tag 201	100002-400001-C222	100002-400001-C222	Search
20	100002-400001-C223	TAC Sensors	2	Senior Tag 201	100002-400001-C223	100002-400001-C223	Search

TMS register the Temperature Record Tags in the database and assign the Tag to its owner.

云端管理软件。现在开始设置传感器标签在数据库中已注册的传感器标签，并分配标签的使用人和标签的设置。

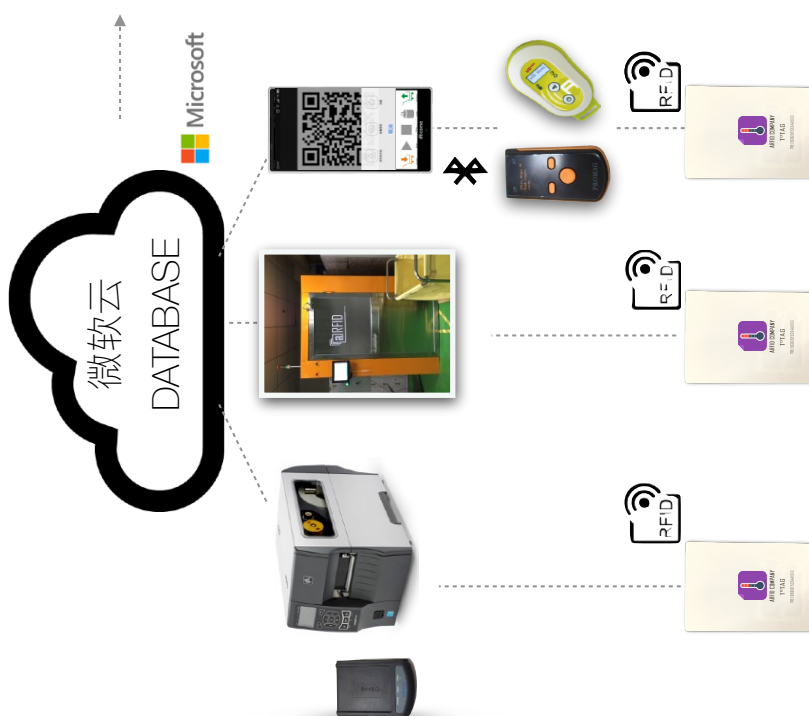


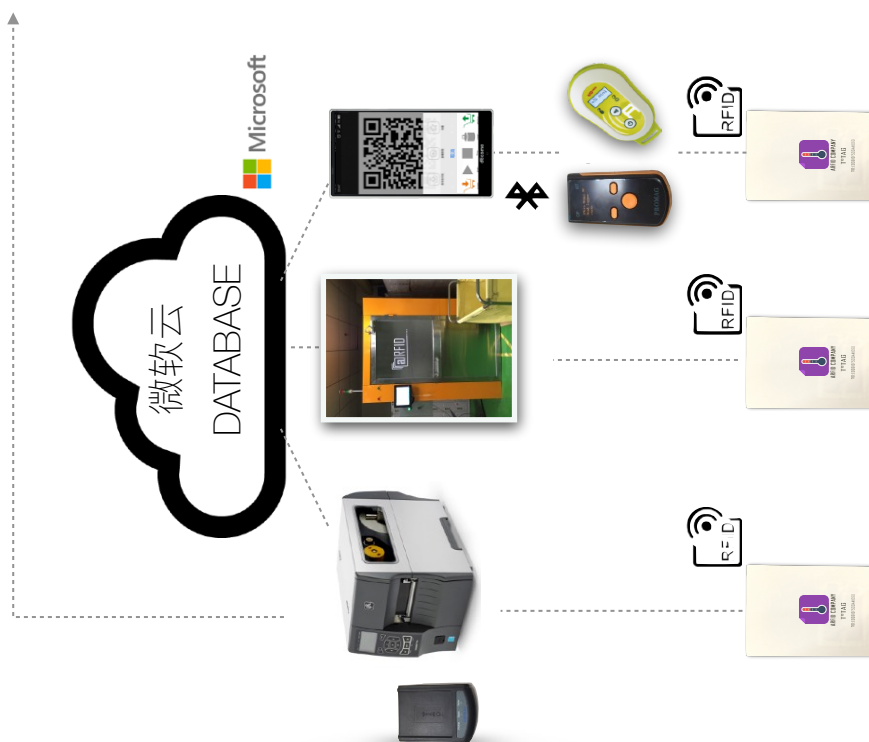
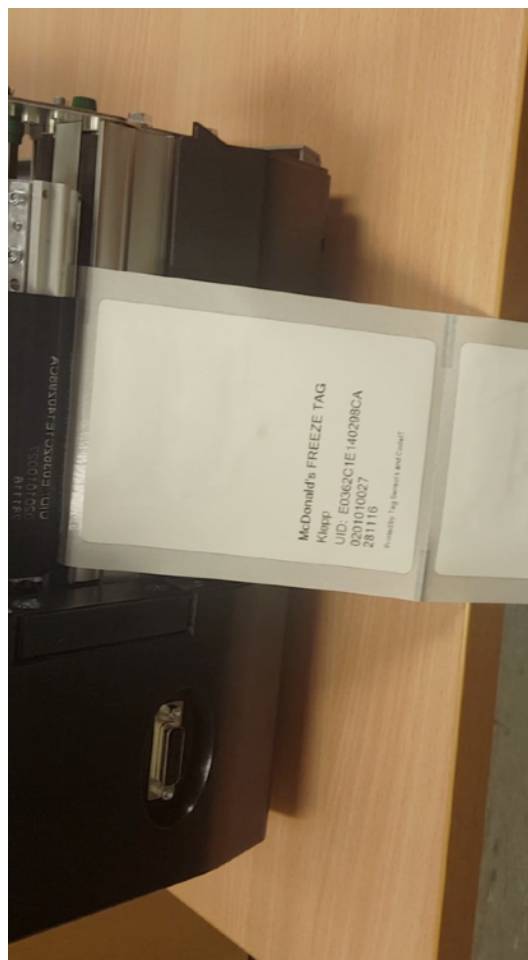



The screenshot shows the 'NFC TAG profile template' configuration window. The 'Profile name' is 'NFC TAG profile template'. The 'Delay' is set to 0 days, 0 hours, and 0 minutes. The 'Delay to set' is 0 seconds. The 'Delay to set' is 0 seconds. The 'Interval' is 0 hours, 0 minutes, and 0 seconds. The 'Interval to set' is 0 seconds. The 'Logging period' is 0 seconds. The 'Log Mode' is 'Driver'. The 'Save' button is visible.

The settings of the temperature record Tag are set

温度记录标签的设置界面，设置保质期、限制温度、记录温度的间隔





Print the Tag while starting the Tag in the standby state.

RFID打印机打印标签，同时启动标签在待机状态。



TAG profile view

Profile name
Delay 533s Int 5min
Created 09/22/2015T11:50:06
Type Static
Start delay time:

Day	Hour	Min	Sec
0	0	8	53

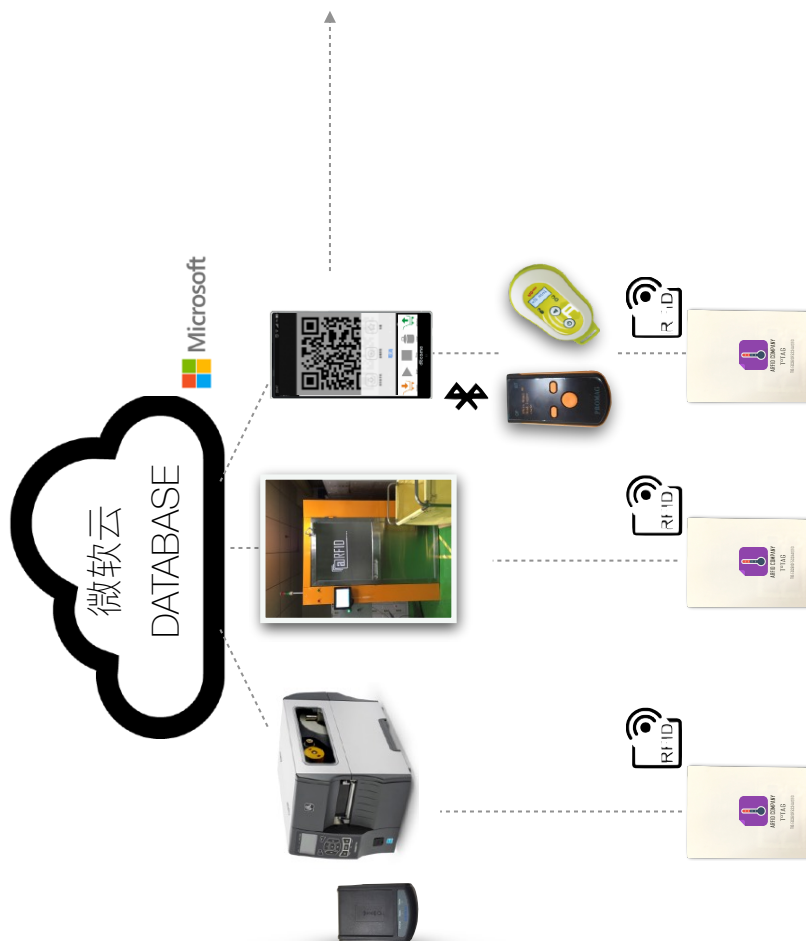
Interval:

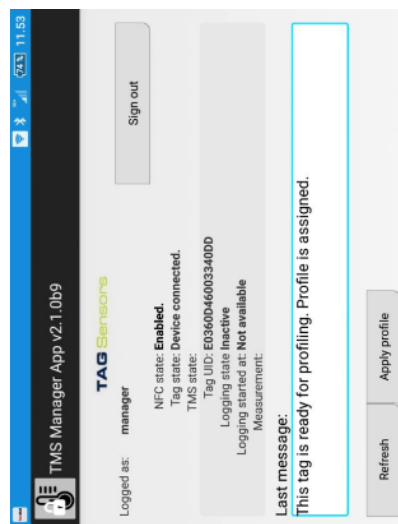
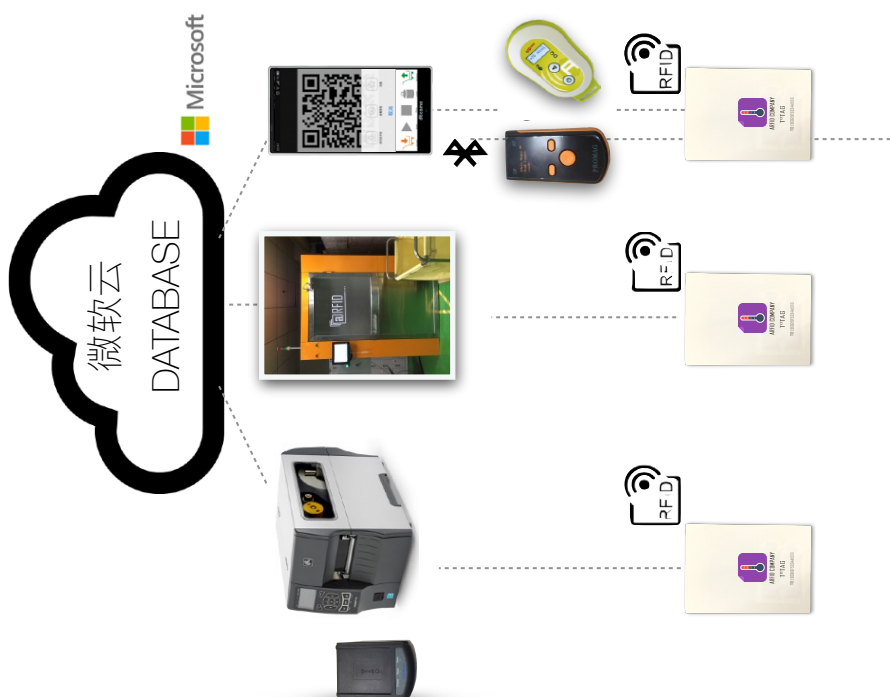
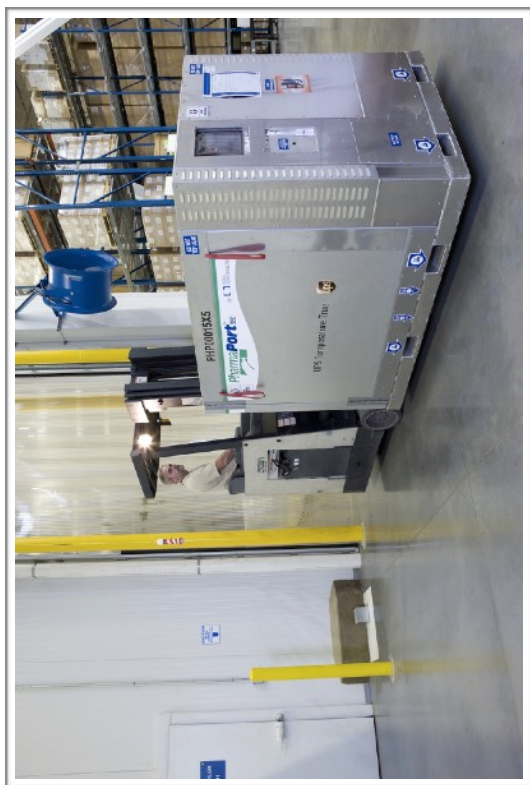
Hour	Min	Sec
0	5	0

☐ Erase memory

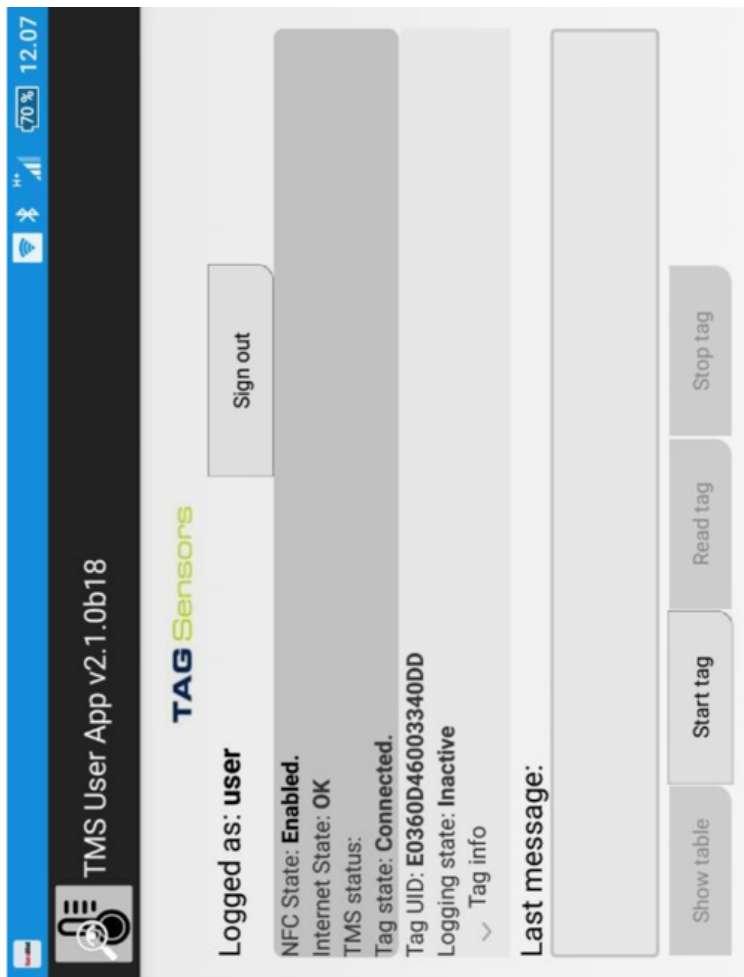
Cancel Apply profile

Or use the handset to start the temperature record Tag.
或者使用手持机启动温度记录标签。

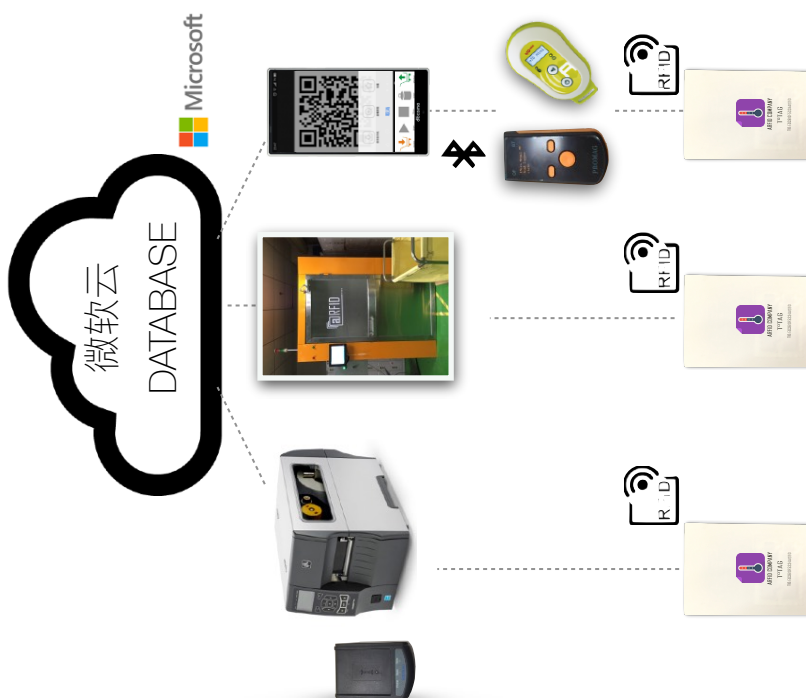


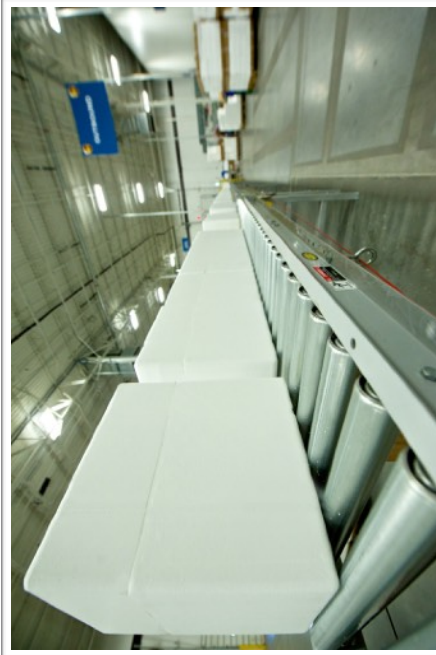
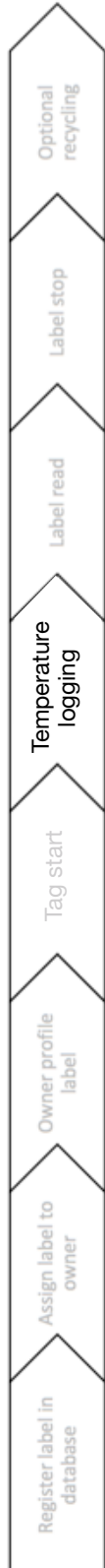


UHF Reader start the temperature record Tag.
通过冷库出口，出口RFID大型设备启动所有温度标签开始记录。

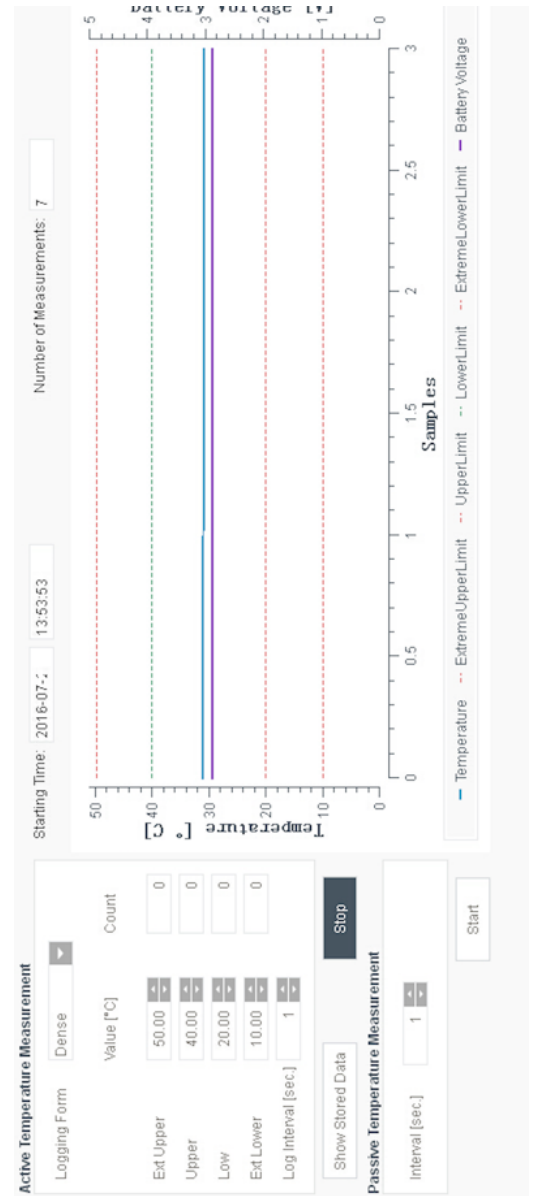


UHF Reader start the temperature record Tag.
通过冷库出口，出口RFID大型设备启动所有温度标签，手机端的通知。





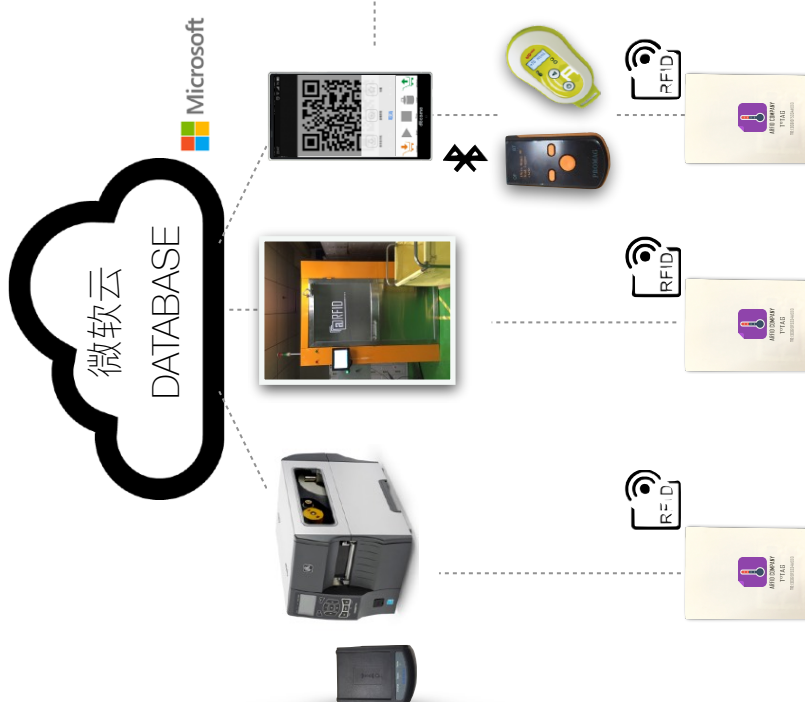
Transit, the transport, the temperature continued to record.
中转中、运输中，温度持续记录。

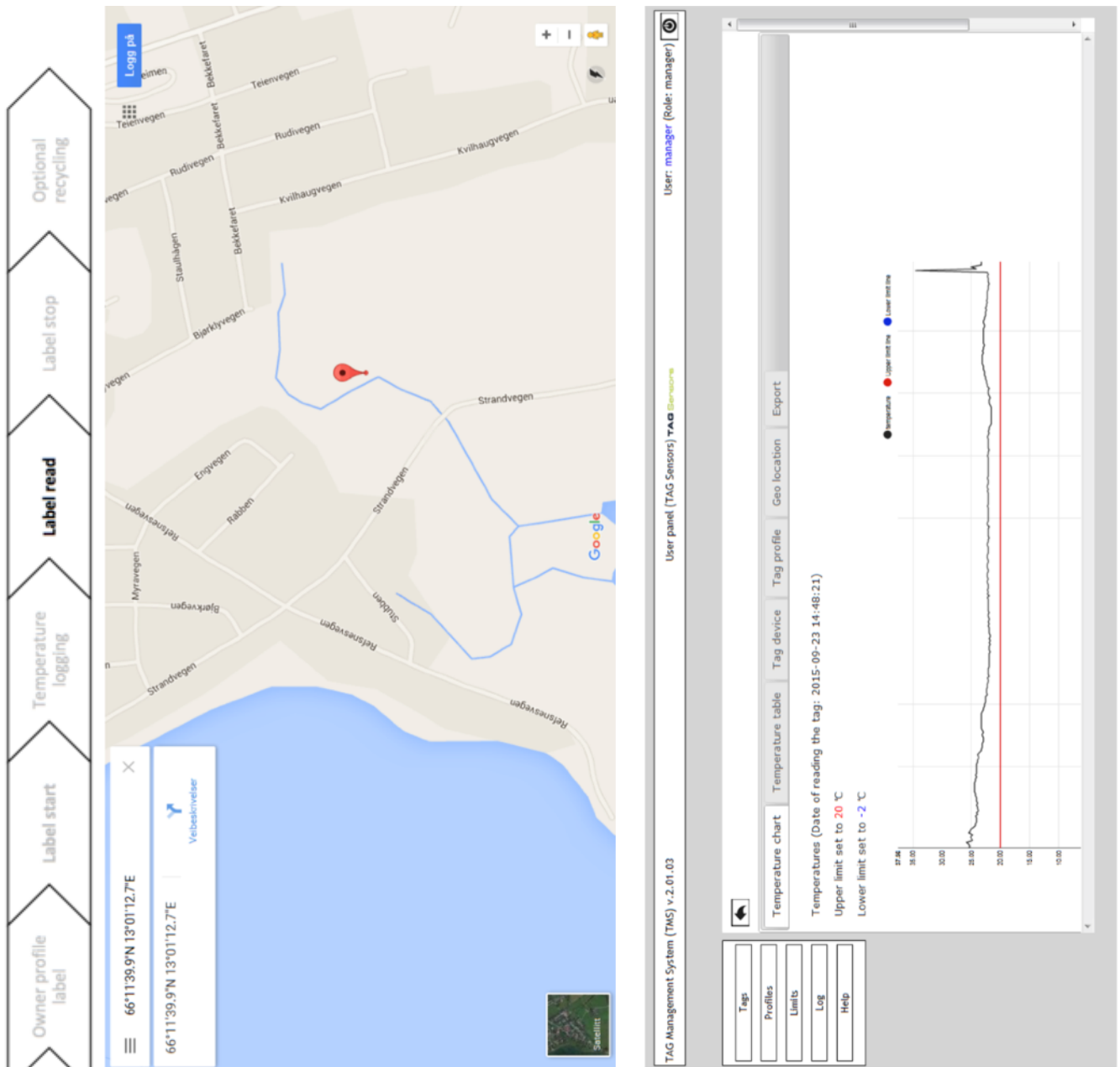




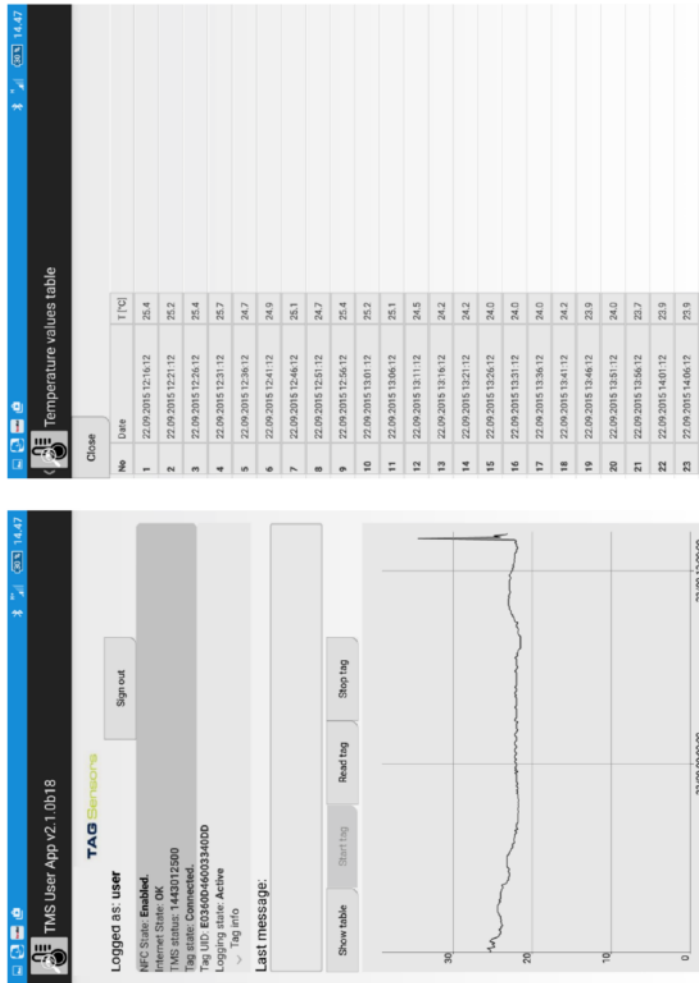
When the goods are received, use the handheld device to read the Tag and confirm the transport temperature record.

货物收到时，用手持设备读取标签，确认运输过程的温度记录。



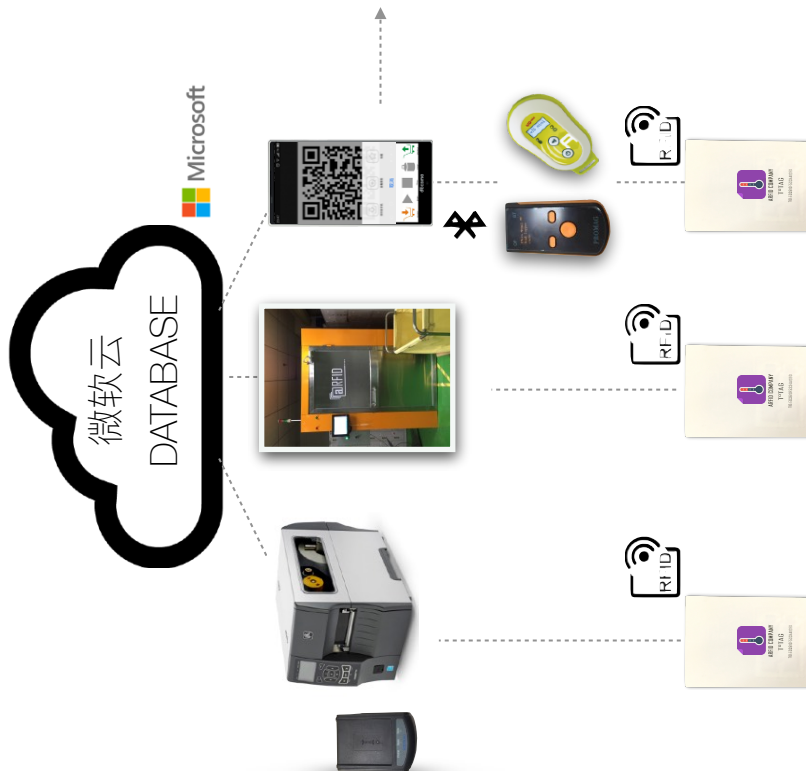


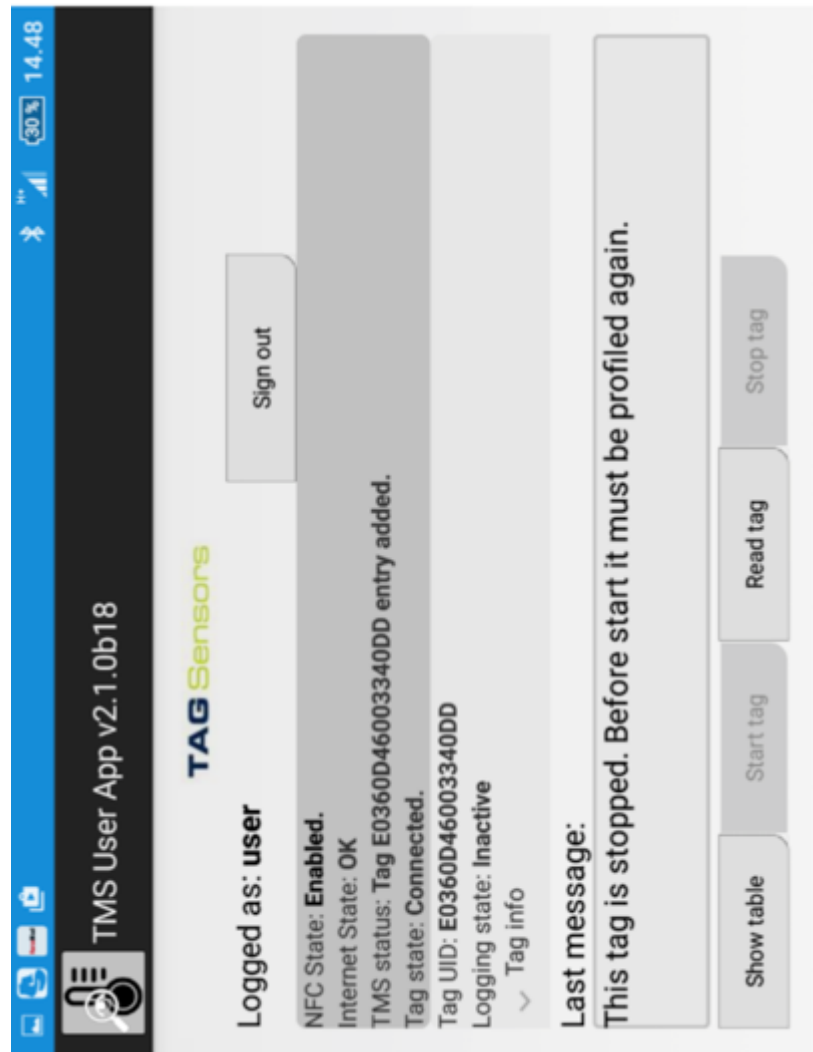
When client receive the goods,
the terminal automatically upload
temperature record.
当收到货物时，通过终端自动上传
温度记录和收货的地址。



Use the mobile phone to inquire about the detailed shipping temperature record.

透过手机端查询单号对应的详细运输温度记录。

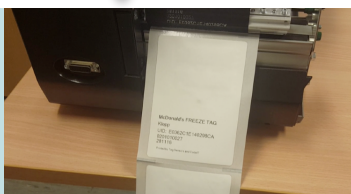




The Tag stops recording
标签停止记录。



屠宰厂或制药厂



RFID 打印机打印温度标签，标签待命



RFID 标签贴在货物表面



叉车通过叉车商的读写器，准确找到货物



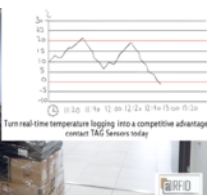
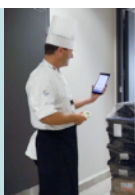
货物出库，全部标签自动启动工作



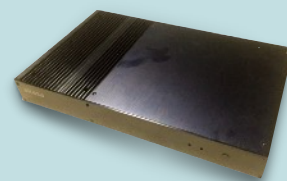
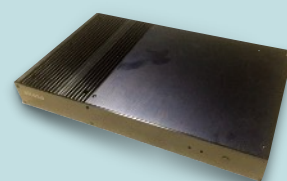
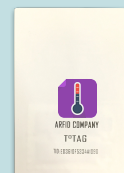
货物上物流公司的货车启运，如果物流公司需要监控，加装 RFID 读写器。



同时避免因为货物中转时，因为仅有车厢内才温度记录仪，而遗失温度记录。运输过程中，全程记录车厢内温度。如有 RFID 读写器，可以超温报警。



货物到达目的地，如麦当劳分店、药店、防疫站。使用 RFID 终端收货确认全程温度。



T°TAG

温度记录标签

新设计通讯天线，通讯距离增加一倍。

New Communication antenna, Increase read and write distance doubled



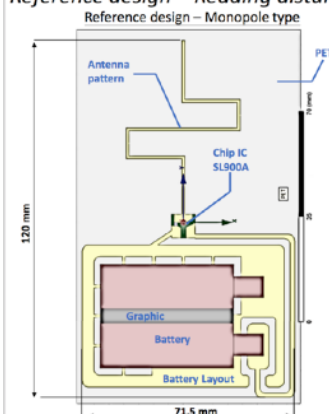
电池

Battery

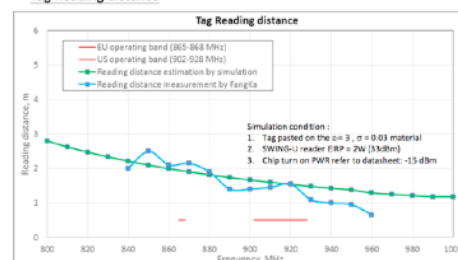
个性化打印区域

Personalized print area

Reference design – Reading distances



Tag Reading distance



Condition \ Frequency(MHz)	800	810	819	830	840	850	860	870	880	890
Reading distance estimation by simulation	2.80	2.65	2.47	2.33	2.21	2.10	1.95	1.83	1.82	1.74
Reading distance measurement by Fangda	NA	NA	NA	NA	2.00	2.00	2.00	2.00	1.90	1.40

Condition \ Frequency(MHz)	900	910	919	930	940	950	960	970	980	990	1000
Reading distance estimation by simulation	1.66	1.60	1.54	1.48	1.43	1.38	1.26	1.21	1.21	1.18	1.18
Reading distance measurement by Fangda	1.40	1.45	1.55	1.60	1.60	1.60	0.95	0.85	NA	NA	NA

温度记录标签芯片包含：逻辑运算、RFID无线通讯功能、1Kb存储器、时钟、电源管理
T.Tag II Chip include: logic operation,RFID wireless communication ,1Kb memory, clock, Power management

CUSTOMER



Food logistics



Animal & fish vaccine



Human medicine



Human medicine



Fisheries and aquaculture



Human & fish vaccine



Food logistics



Food logistics



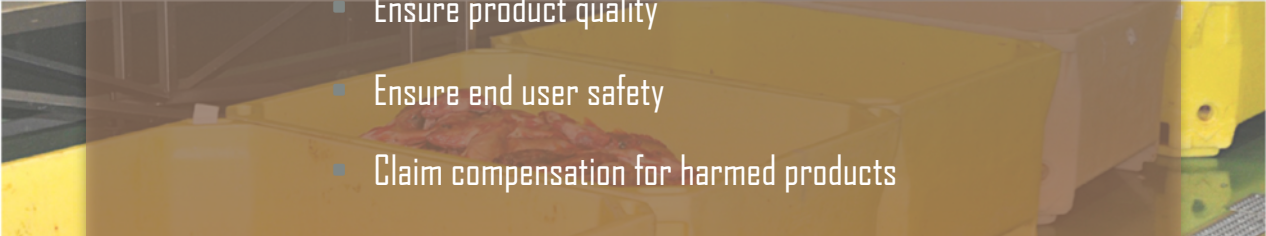
Logistics

Company	Industry	Turnover	Comment	Web
McDonald's	Food	USD 27 billion (2014)	The world's largest chain of hamburger fast food restaurants.	www.mcdonalds.com
VESO	Medicine and vaccine	NOK 500 million (2014)*	Supplier of animal vaccines and medicines.	www.veso.no
Norsk Medisinaldepot	Medicine and vaccine	NOK 1 594 million (2014)*	One of Norway's largest suppliers of pharmaceuticals and health products. Owner of two pharmacy chains (Vitus Apotek and Ditt Apotek).	www.nmd.no
Apotek 1	Medicine and vaccine	NOK 7 333 million (2014)*	One of Norway's largest pharmacy chains.	www.apotek1.no
ASKO	Food and medicine	NOK 50 billion (2014)	One of Norway's largest transport companies.	www.asko.no
Europharma	Medicine and vaccine	NOK 500 million (2014)*	Supplier of fish vaccines and other fish health products.	www.europharma.no
Meyership	Food and medicine	NOK 33 million (2014)*	Provider of distribution services, local and long-distance transport, transport brokerage, express freight and courier services.	www.meyership.no
Fürst	Biological	NOK 573 million (2014)*	Norway's largest private laboratory within medical biochemistry, clinical pharmacology, microbiology and pathology.	www.furst.no
Peritus Farm	Food and medicine	Unknown	Consultancy firm within dairy farming, meat fattening and forage production.	www.peritusfarm.com
Identiv	Food and medicine	USD 81 million (2014)	Advisor within the Internet of Things market.	www.identiv.com
Alliance Boots	Food and medicine	NOK 3 656 million (2014)*	One of Norway's largest pharmacy chains.	www.boots.no
Elanco	Medicine and vaccine	USD 2 150 million (2013)	Global animal health company.	www.elanco.com
Gamba Natural	Food	Unknown	Land based production of gambas.	www.gambanatural.es
Ice Fresh	Food	ISK 10 billion (2014)***	Icefresh GmbH processes fresh fish. Part of Icelandic Samherji-Group. Located in USA, Germany, Iceland and Norway.	www.icefresh.de
Lerøy Seafood Group	Food	NOK 12 579 million (2014)**	Lerøy Seafood Group is the leading exporter of seafood from Norway and the world's second largest producer of Atlantic Salmon.	www.leroyseafood.com
Nofima	R&D	NOK 526 million (2014)*	Nofima is one of the largest institutes for applied research within the fields of fisheries, aquaculture and food research in Europe.	www.nofima.no
BaRe Nord	Food	NOK 809 million (2014)*	Wholesaler of fruit and vegetables	www.bama.no
MAX Burgers	Food	EUR 220 million (2014)****	Hamburger restaurant chain with 120 restaurants worldwide.	www.maxburgers.com
Dole Sweden	Food	Unknown	The world's largest producer and marketer of fresh fruit and vegetables.	www.dole.com
Modolv Sjøset Fisk	Food	NOK 77 million (2014)*	Producer of whitefish products.	www.msfish.no
MSD Animal Health	Medicine and Vaccine	NOK 400 million (2014)*	MSD Animal Health is a global research-based company that develops, manufactures and markets a broad range of veterinary medicines and services.	www.msd-animal-health.no
Finland Postal Service	Postal Service	Unknown		www.posti.fi



Value proposition: Temperature log

We give customers access to the complete temperature log from production to consumption. This enables customers to:

- Ensure product quality
 - Ensure end user safety
 - Claim compensation for harmed products
 - Get more efficient logistics
 - Decrease insurance costs
 - Secure their brand
- 

价值主张：温度记录

我们给客户访问完整的温度记录从生产到消费。这使客户能够：

- 确保产品质量
 - 确保最终用户的安全
 - 对产品的损害赔偿要求获得更多高效的物流
 - 降低保险费用
 - 保护他们的品牌
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