红茶移动
Redtea Mobile

Power the Future of Device Connectivity

Connectivity as a Service

您 的 设 备 连 接 专 家
Create a Connected Future

- **Redtea Mobile CaaS for IoT Development**

  - **RedteaGO Global Roaming Service**

    - **RedteaReady for M2M Connectivity**

  - **RedteaSIM for LPWAN**

- **Company Profile**

Part 1. Redtea Mobile CaaS for IoT Development

Connectivity as a Service

Industrial IoT Connectivity Challenges

Traditional SIM card is no longer suitable for IoT development

- high cost of production, distribution,delivery, storage and management of SIM card(especially for OEMs that produce locally and ship globally);
- SIM card can't fit for harsh environment（extreme high/low temperature, vibration, long time exposure, long lifecycle of devices etc);
- SIM card can't meet the demanding industrial design (for example：tracker is quite demanding in size).

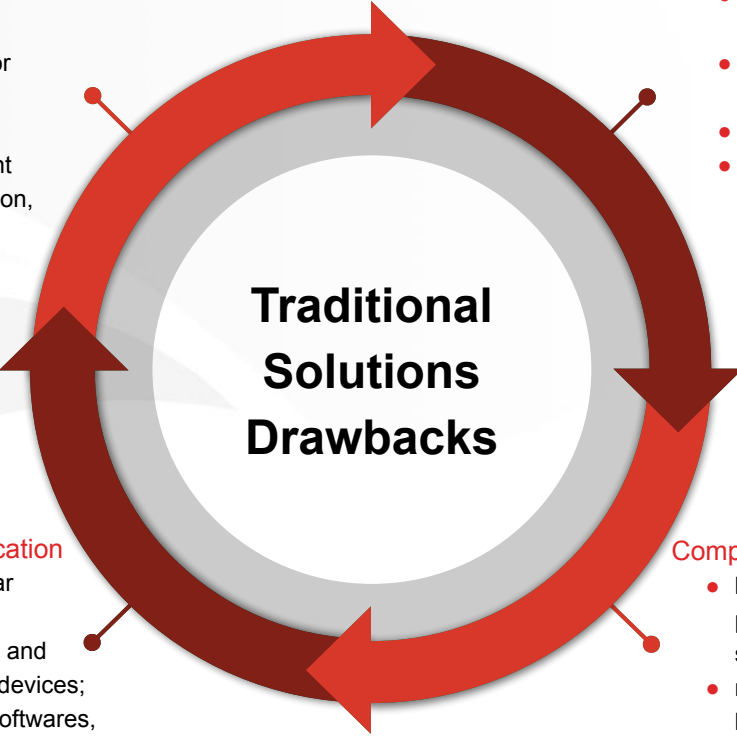**Traditional cellular network won't fit the demand for IoT development**

- IoT devices are unintended, no interface, no report or feedback;
- device connectivity should adapt to the change of telecom infrastructure;
- devices should always stay connected
- gap between operator and device connectivity.

Traditional Solutions Drawbacks

Diversity and fragmentation of IoT application

- diverse operations systems and cellular network types;
- a wide ranges of application scenarios and complexity for network connectivity of devices;
- customized demands for hardwares, softwares, and network conditions including coverage, speed, and stability.
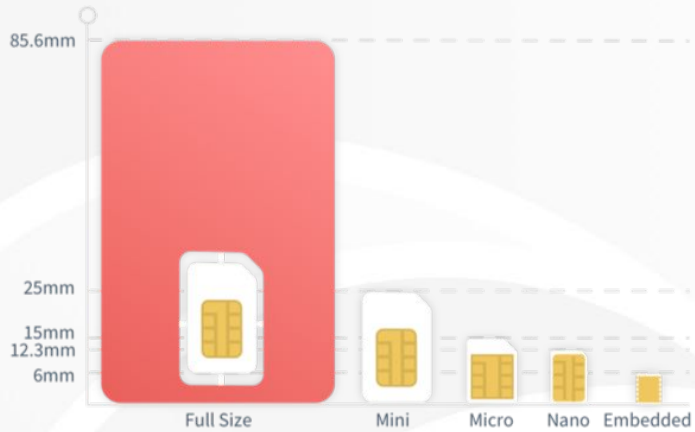
Complex procedure of network connectivity

- long process of module and SIM card purchase and complex operation of data service.
- non-networked devices still accounts for a large portion, thus a long lifecycle for updating all the devices , high cost of modification of softwares and hardwares and quite a challenge for the production line.
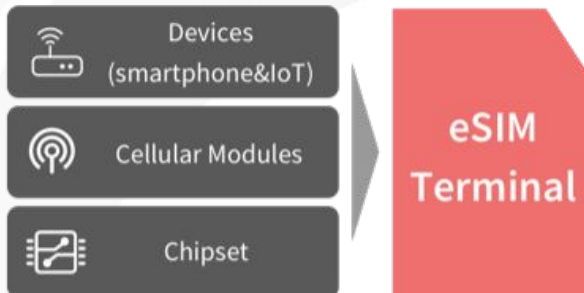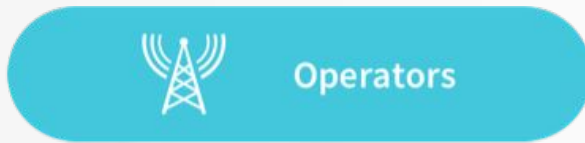
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eSIM: The Gone SIM Card

Attributes	Plug-in SIM card (mini/micro/nano)	Embedded SIM Card (eUICC)
Size	Big	Small
Operating Temperature	-25℃ —85℃	-40℃ —105℃
Duration	10 years	15 years

- SIM card has played a fundamental role in mobile Telecoms for more than 25 years.

- With the advent of eSIM (Embedded SIM), the SIM may be securely downloaded into a secure element that can be permanently embedded inside any type of devices.
  - → The capability of a "SIM card" is embedded permanently in the device.
  - → Remote Provisioning: connectivity is programmable due to the fact that operator profiles can be remotely downloaded and activated.

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eSIM: The Architecture

Operators

Remote SIM Provisioning(RSP)

Devices (smartphone&IoT)

Cellular Modules

Chipset

eSIM Terminal

Redtea Software

- Operators: to support eSIM, operators will host their SIM profiles with one or more "RSP" services, which requires system/logistics integration.

- RSP: a dedicated cloud service that follows GSMA standards to host SIM profiles, and to provision them to eSIM-capable devices accordingly.

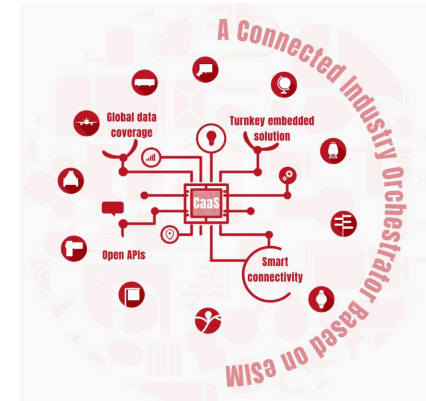- eSIM terminal: the implementation of eSIM capability in different types of IoT devices or smartphones.

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Variable eSIM Solutions（Redtea Mobile Covers All）

Alternatives	eUICC	iUICC	TEE eSIM (Trusted Execution Environment)
Form	embedded tamper-resistant chipset (takes up physical space within the device)	UICC integrated in SoC as a separate secure processor core alongside other cores	an existing secure area of the main processor
Cost	high cost (may be a barrier for cheap devices)	included in the SoC	cost-effective
Integration	need BOM change, may impact flexibility	need BOM change, may impact flexibility	ease of integration and application updates

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Redtea Mobile : a CaaS Company (Connectivity as a Service)

Redtea Mobile is a **pioneering eSIM technology practitioner** and d**evice connectivity service provider** based in Shenzhen. By offering the complete eSIM-capable solution with pervasive cellular network coverage for various types of IoT devices across the world, Redtea Mobile has shipped its embedded connectivity capability to over 250 million devices with global 3G/4G network resources covering 100+ countries and regions.

By **taking care of the complicated details of communications infrastructure and how cellular network works**, we are committed to providing our customers (including mobile operators, device OEMs, chipset and module manufacturers) with a packaged connectivity service that is flexible, reliable, scalable, and simple enough to use.

We are Device Connectivity Provider.

- We ship connectivity capability for devices;
- We bridge the connectivity gap between traditional cellular network and M2M;
- We leverage eSIM technology and beyond.

We Partner with MNOs/MVNOs.

- We do not own a bandwidth or tower;
- We do not run core network;
- We alternate between different carriers;
- We generate more connected devices.

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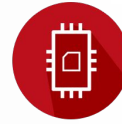# Redtea Mobile: Creator of the Paradigm of "CaaS" and CaaS Service Provider

Global **Smart** **Embedded** **Open**

Connectivity-as-a-Service			
Core technologies of CaaS	**To enable devices**	**To benefit OEMs**	
Virtualization — To visualize SIM Card, to fit for diverse terminal integration solution addressing the challenges of fragmented network connectivity scenarios	• Integration of SIM card and devices, as a vitualized SIM inside the device • SIM embedded before shipping	• To reduce SIM card purchase cost：including the cost of SIM card production, distribution,delivery,storage and management • To streamline SIM distribution：on-demand and flexible SIM subscription option for multiple carriers, over-the-air provisioning without human operation • efficient and centralized SIM card management。	**New types of SIM card vendor**
Abstraction — To abstract all the elements included in device connectivity solution including software, hardware, cellular network coverage, change of places and offer unified turkey solution	• enabling network connectivity upon powering on（Plug&Play Connectivity）； • as an insurance or redundancy for device connectivity（Always-on Connectivity)	• better efficiency for network initiation and lower cost of network installment； • When disconnected or unstable network, dynamic option of backup network is available，for always-on connectivity and easy maintenance	**Additional service provider based on eSIM** i.e. value-added data service
Openness — To offer open API for enabling OEMs or developers the easy access to build up connectivity solution for Redteaready-capable devices	• realizing the remote provisioning of network initiation and subsriciption for network； • enabling priprietary network management with open API or standard sdk	• automatic option／subscription of carrier network； • programmable data package； • programmable QoS。	

- better capability：integration of SIM card and terminal device, to address the challenges of harsh environment and demanding industrial design.
- higher reliability：SIM card embedded in devices, with redundant network, more stable IoT deployment without impact in case of the change of telecom infrastructure
- more scalability：remote operation of optimizing telecommunication capability，no human operation and lower maintenance cost
- deeper penetration：remote provisioning or update of data service, to reduce the cost and generate more profit

eSIM drives the development of CaaS

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Product Portfolio

RedteaGO

Global data service for consumers

- *eSIM based global data service at local rates;*
- *10+ cellphone OEM partners;*
- *250M+ installed devices;*
- *100M registered users;*
- *Localization services across the globe.*

Redtea® Ready

Global connectivity solution for M2M Devices

- *Global Connectivity shipped to versatile types of devices;*
- *Connectivity management platform to aggregate all;*
- *Plug&Play Connectivity, Always-on Connectivity;*
- *CaaS (Connectivity as a service).*

RedteaSIM

Innovative SIM dispatch solution for LPWAN

- *Trusted Execution Environment (TEE) based SIM manufacturing & dispatch;*
- *Seamless SIM profile transition via remote SIM provisioning;*
- *Embedded RedteaSIM in NB chipset with various chipset vendors;*
- *Integrated in factory environment with module vendors and operators.*

Part 2.   RedteaGO Global Data Service

Connectivity as a Service

RedteaGO：Global Data Coverage Service for Consumers

- RedteaGO, as Redtea Mobile's global data coverage service based on eSIM-capable consumer electronics like smartphones, has always been the leading role in the industry, with rich experience in offering fast GTM process.
- Currently, RedteaGO offers data service based on built-in app for most domestic brands.
- RedteaGO offers also online marketplace for eSIM-capable iPhone and Google Pixel series（including iPhone XS, XR, XS Max, and Google Pixel 3, 3XL, 3a, 3a XL, and etc.)

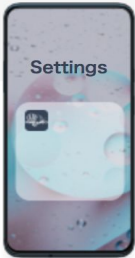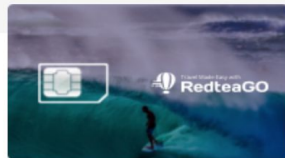| Gives end users the flexibility to pick and choose the data plan that's right for their trip.	Offers consumers the convenience to manage network connection in user-friendly interfaces.	Enables exclusive data packages for specific apps (i.e. independent data package for Wechat)	Allows cellular data plan purchase and activation even when you're away from a Wi-Fi hotspot.
100+	*250M+*	*100M+*	*30+*
Countries and Regions with 3G/4G Coverage	eSIM-capable terminals	Registered users	MNO/MVNO Partners

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RedteaGO

Built-in APP, international Internet access, one-click activation
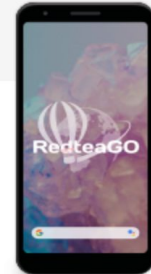
Android APP **SIM Card** **iPhone eSIM** 🍎 **Pixel eSIM** Ⓖ

- Gives partner smartphones the capability of portable localized connectivity across the globe for their consumers;
- Allows cellular data plan purchase and activation even when you're away from a Wi-Fi hotspot；
- Enables data plan purchase and activation even without network connection via smart bootstrapping；
- Supports different means of eSIM integration on an extensive range of smartphone devices, including built-in app for android, QR code for iOS, and SIM card, etc.
- Services available for operators to develop domestic connectivity；
- Product link: www.redteago.com Facebook link: https://www.facebook.com/redteamobile
- 250M devices shipped, 100M registered users.

RedteaGO

eSIM data supermarket, Globally, local network

Redtea Mobile offers a coverage of more than 100 countries and regions around the world ✕

◎ Asia

Cambodia, Hong Kong(China), India, Indonesia, Israel, Japan, Kazakhstan, Korea, Kyrgyzstan, Laos, Macau(China), Myanmar, Malaysia, Nepal, Philippines, Saudi Arabia, Singapore, Sri Lanka, Taiwan(China), Tajikistan, Thailand, UAE, Uzbekistan, Pakistan, Bangladesh

◎ Europe

Armenia, Austria, Albania, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Greenland, Georgia, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Malta, Moldova, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom

◎ North America

USA, Guam, Saipan, Canada, Mexico

◎ Oceanian

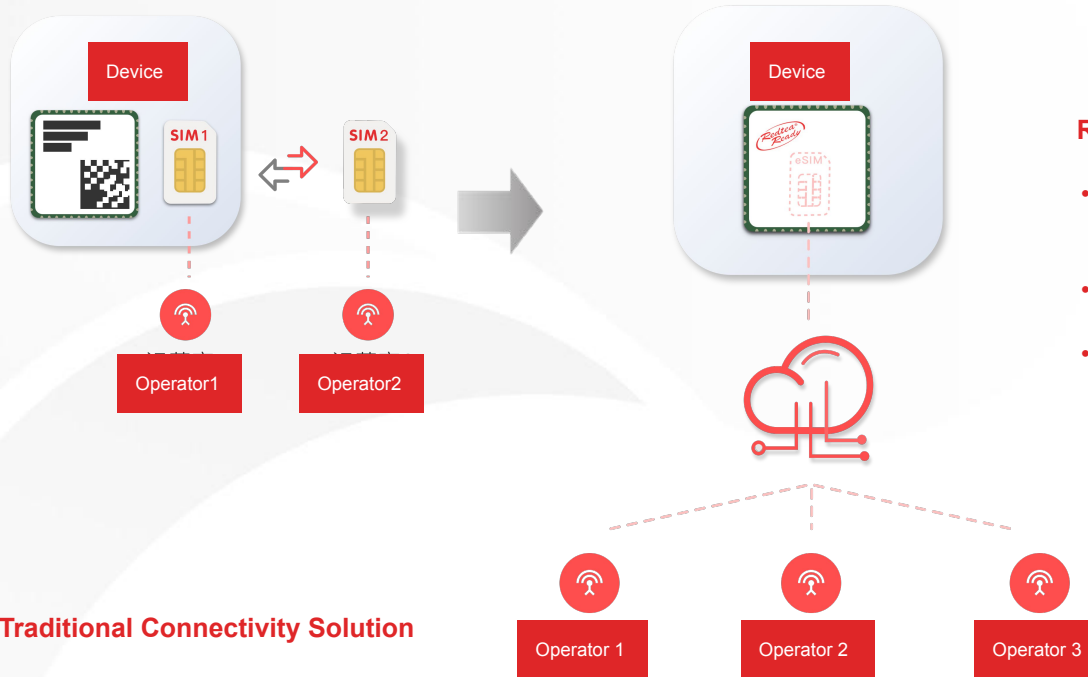Australia, New Zealand

◎ Africa

Ghana, South Africa, Egypt

◎ Latin America

Argentina, Brazil, Colombia, Chile, Costa Rica, Ecuador, El Salvador, Guatemala, Nicaragua, Panama, Peru, Uruguay,

Part 3. **Redtea® Ready** **for M2M Connectivity**

Connectivity as a Service

RedteaReady: Scale Your Device's IoT Deployment Globally

RedteaReady vs. Traditional Solution

RedteaReady connectivity solution

- SIM card embedded or integrated in modules(eSIM), to enable plug&play connectivity；
- No adjustment of hardware design is needed；
- Hassle-free connectivity experience of enabling remote network initiation and dynamic SIM profile distribution, to immunize your device against spontaneous loss of connectivity and remain it online.

Device

SIM 1
SIM 2

Operator1
Operator2

Device

eSIM

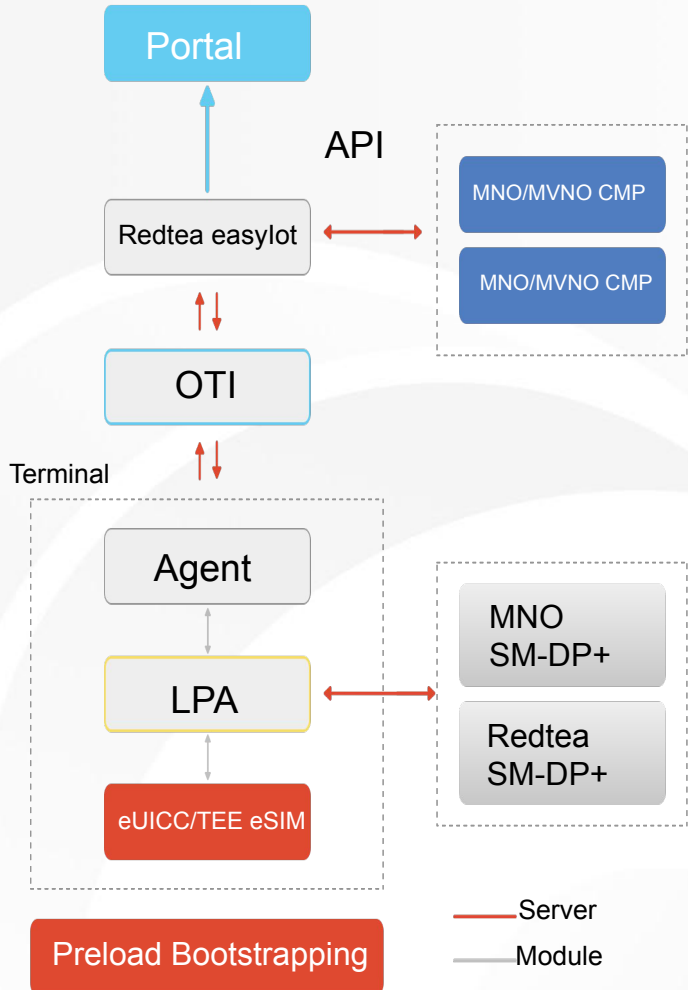Operator 1
Operator 2
Operator 3

Traditional Connectivity Solution

- OEMs need to purchase cellular module and SIM card separetely；
- One SIM card is bounded with one single operator, subscription change requires SIM card swapping.

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RedteaReady: The Architecture

Portal

API

Redtea easyIot

MNO/MVNO CMP

MNO/MVNO CMP

OTI

Terminal

Agent

MNO
SM-DP+

LPA

Redtea
SM-DP+

eUICC/TEE eSIM

Preload Bootstrapping

Server
Module

- We have developed a framework that implements eSIM capability for M2M devices with Consumer RSP (SM-DP+).
  - Leverage existing investment on DP+.
  - Easy to deploy.
- Key components
  - Agent: a bridge between the server and LPA to enable connectivity management.
  - OTI: guarantees "Always-on Connectivity" by establishing a stable channel between platform and devices.
  - Bootstrapping: pre-install a provisional profile in the eUICC to setup an initial interim connection of mobile network to realize "Plug & Play Connectivity" capability for devices.
  - Multi-certificates: ensure global distribution and standby connectivity.
  - Proprietary connectivity management platform (CMP) and portal available.

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RedteaReady : Device Connectivity Solution for both CE and M2M Cases

Automotive: Always online, always aware

Consumer: Travel made easy with RedteaGO

Retail: Cloud-managed networking solution

Manufacturing: Produce locally, connect globally

Tracking: Introduce redundancy into networks

Utilities: Unlock new smart metering opportunities

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RedteaReady is Applied in a Wide Range of Vertical IoT industries

FWA

- **unified SIM card management**
- **redundant network**

Provide more flexible cellular data network connection based on eSIM technology to replace or complement the traditional fixed-line or broadband networks, and help retailers on scalable in-store IT management across all of its chain outlets.

CPE   Ads player   DTU

Automotives

- **remote provisioning of SIM profile**
- **separate billing**

Download local carrier's data remotely and automatically when devices reach destination countries to make vehicle connectivity without borders. Devices will no longer need to be customised for each market with a local SIM card.

T-Box   Rearview Mirror   OBD

Logistics

- **global data coverage**
- **dynamic network subscription**

Enable always-connected experience for trackers and locators by introducing redundancy into networks, which can forcibly bring up the network connection to report device's current location when it detected a loss in connectivity.

Tracker   Locator

Handheld Terminals

- **power-saving**
- **redundant network**

Provide a complete portable go-anywhere solution to handheld terminals by empowering them to connect straight from the moment the device is turned on as it comes up with a bootstrap (preloaded) profile to enable initial network setup and connection to available data networks remotely.

Translator   POS Machine   Mi-Fi

Utilities (NB)

- **power-saving**
- **redundant network**

Fix eSIM into NB-IoT module to offer several distinct benefits for utility companies including lower infrastructure costs, reduced installation costs and quick implementation times, etc.

Smoke Detector   Smart Meters

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RedteaReady Application Scenario I : Automotives

1

Before Market

Based on connectivity management platform (CMP) , Redtea Mobile offers integrated connectivity service, data and device management for before-market in-vehicle devices.

2

After Market

Download local carrier's data remotely and automatically when devices reach destination countries to make vehicle connectivity without borders. Devices will no longer need to be customized for each market with a local SIM card.

Redteaready eSIM solutions provides all-time and trans-regional connectivity solution for in-vehicle rearview mirror, by FOTA remote update, TEE eSIM solution could be quickly integrated into all the shipped review mirrors.

A fully automatic inspection tool for all the systems.
By connecting to the vehicle diagnostic stand, once lighted on, the inspection for all in-vehicle system starts without human intervention nor interface, and a diagnosis report would be sent automatically after finishing.

元征 **LAUNCH**

RedteaReady Application Scenario III：Logistics & Tracking

Enable always-connected experience for trackers and locators by introducing redundancy into networks, which can forcibly bring up the network connection to report device's current location when it is detected a loss in connectivity.

1

Device Weight

In some particular cases, tracker has strict demands about weight (for example, the leg band tag serves as a tracker to trace the racing pigeons are supposed to be lighter than 4g for the competition, RedteaReady eSIM solution integrated SIM capability into the tiny device without adding its weight.)

2

Always-on connectivity

Tracker is supposed to be always-connected to mark direction, location and duration, the eSIM solution introduces redundancy into networks, which can forcibly bring up the network connection when it is detected a loss in connectivity, which fully caters to the network connectivity demands.

To enable wireless cellular connectivity based on TEE eSIM, one single operator can't offer the whole coverage for cross-country or trasnregional devices, once the car reaches the area without network coverage, RedteaReady solution will ensure always-on connectivity by offering backup network, to support the application like voice control, navigation, speeding remind, driving recording, GPS locating, electronic speed warning etc.

RedteaReady Application Scenario IV：Smart Manufacturing

Application Scenario：Produce Locally, Ship Globally

- No need to be customized for each market with a local SIM card.
- Based on eSIM-capable module and standard API from Redtea Mobile, allow device to download local carrier's network remotely and automatically as they reach destination countries.

Customer Story

Based on comprehensive strategic partnership with industrial IoT device manufacturers, all its products are tested with Redteaready eSIM solution , and RedteaReady connectivity solution would be designated as a standard option of function for all its products widely applied in many industries including industrial IoT, new retails, smart city, new energy, smart home etc.

| Industrial Router | Industrial Wireless DTU | 4G Video Router | 4G Smart Router for Public Wi-Fi |

RedteaReady is Compatible with Mainstream Chipsets or Modules

We have adopted our eSIM and connectivity capability onto versatile types of chipsets and cellular modules, and more to come.

Compatible Chipsets

QUALCOMM® · MEDIATEK 聯發科技 · Infineon · UNISOC · SPREADTRUM · SANECHIPS

Compatible Modules

QUECTEL · SIMCom · GOSUNCN 高新兴物联 · MEIG 美格 · Fibocom

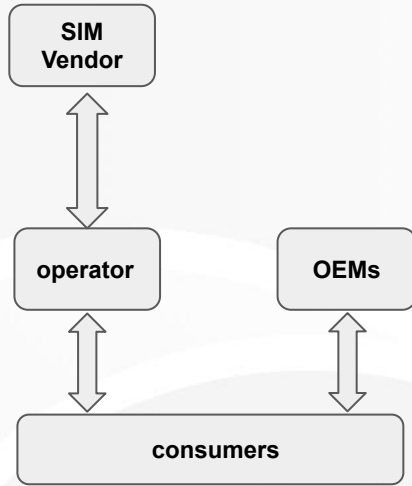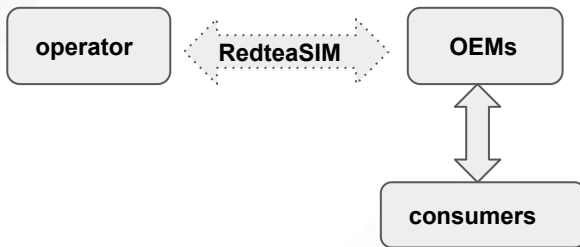LONG SUNG 龙尚科技 · CHEERZING 骐俊股份 · 上海域格信息技术有限公司 · Flairmicro · Neoway 有方

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Part 4. RedteaSIM for LPWAN

Connectivity as a Service

RedteaSIM for IPWAN: Cost-effective Alternative to SIM Management

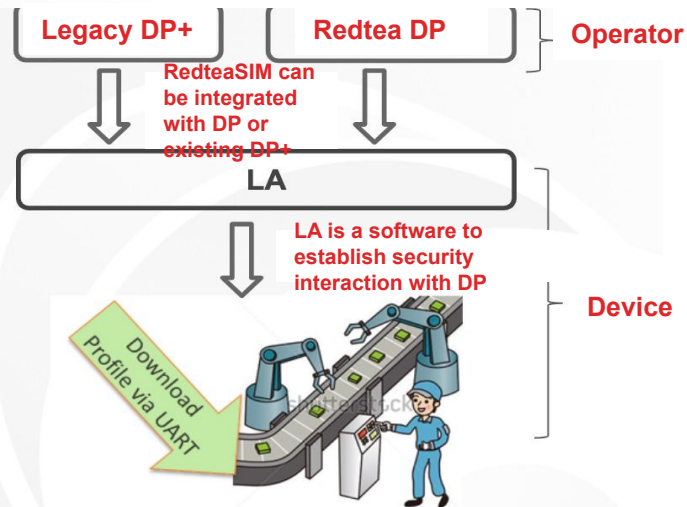- iSIM implementation dedicated for LPWAN chipset.
- SIM capability based on TEE (Trusted Execution Environment) or isolated security environment with proprietary encryption.
  - Low Cost w/o the need of physical SIM card.
  - Seamless integration with the device.
- Security
  - Isolated environment for the storage and authentication with TEE or isolated security environment.
  - Closed platform by eliminating 3rd party software.
  - Limited risk of attack due to low bandwidth and other constraints.
- Deployment
  - Wide adoption with the mainstream chipset and module vendors.
  - On-premise deployment in the factory.
  - Compatible with legacy SM-DP+

Traditional SIM Lifecycle

RedteaSIM Streamlines SIM Management

Legacy DP+   **Redtea DP**   **Operator**

RedteaSIM can be integrated with DP or existing DP+

LA

LA is a software to establish security interaction with DP

Device

Download Profile via UART

RedteaMobile

Part 5. Company Profile

Connectivity as a Service

Company and Team Introduction

Redtea Mobile is established with the commitment to **develop eSIM core technology** and make it usable for the industry, to penetrate eSIM with innovative product/solution and business model, and t**o address the connectivity, scalability challenges for the emerging IoT era.**

- Wide partnership with world's leading players in the industry,

  - smartphone brands: OPPO, vivo, OnePlus, Samsung China, Xiaomi, and more.
  - chipset vendors: Qualcomm, MTK, Unisoc, Infineon, and more.
  - 30+ MNO/MVNO partners with coverage of 100+ countries & regions.

- Visit our website: www.redteamobile.com for more information.

- **Our roadmap starts with our Mission**
  Create a Connected Future
- **Strive to make our Vision a reality**
  To be the world's leading CaaS (Connectivity-as-a-Service) company
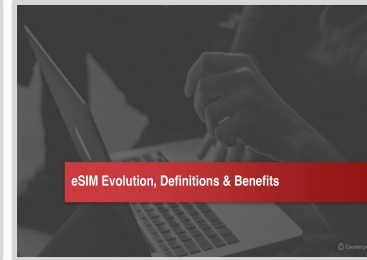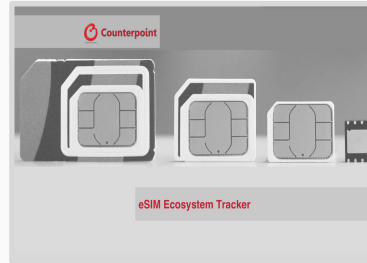- **Live our Core Values**
  Integrity and Boldness

- Founded in 2015
- Over 70 staffs, with more than 50% R&D staffs
- Office in Shenzhen

RedteaMobile

More About Redtea Mobile：Acknowledgement by Media

Global famous market research company
"Counterpoint" issued the eSIM Research in 2019:
Redtea Mobile, as the leading eSIM provider around the world,offers diverse eSIM solutions and is one of the companies with fastest growth in eSIM ecosystem.

eSIM Ecosystem Tracker

eSIM Evolution, Definitions & Benefits

✓ The **software based eSIM** where eUICC so into the Trusted Execution Environment (TE the device is gaining steam as it offer manufacturing & logistical benefits.

✓ **Qualcomm**, **ARM** and others have been pu for the software based eSIM standard bake secure zon also called as iSIM or iUICC

✓ Companies such as **Redteamobile, Simless** partnering with OEMs, operators and chi drive **eUICC** capabilities at the core softw into the TEE or baseband of the device.

Global famous finance magazine *Forbes*：**"100 most customer-centric companies"** , enlisting 10 companies in each industry from 10 industries including new retail, finance, healthcare, B2B, software/internet, hospitality, insurance, telecom, manufacturing, and agriculture.
Redtea Mobile is enlisted for ："**Disrupting the telecom space, Redtea Mobile's cloud technology allows devices to move networks as they change locations, which can alleviate many pain points for customers.**

Blake Morgan

Network CMO
Forbes Senior Contributor

100 Of The Most Customer-Centric Companies

versa. But here are ten companies that do deserve credit for being customer-centric. (Disclosure: Verizon is a former client of mine)

1. Dish Network. Facing a changing industry, Dish listens to customers and re-vamps its offerings to match their preferences.

2. Boost Mobile. The company celebrates diversity and encourages franchise owners to be involved in their communities.

3. DIRECTV. The company scores high rankings from J.D. Power for its overall customer satisfaction and communication.

4. Redtea Mobile. Disrupting the telecom space, Redtea's cloud technology allows devices to move networks as they change locations, which can alleviate many pain points for customers.

Global famous tech blog *TechCrunch*:
Ushering in the Uberlization of telcos, Redtea Mobile is the representative disrupter for the whole industry, pioneering the industrial innovation

Dieter Gerdemann

ATKerney Partner
TechCrunch Contributor

The Uberization of telcos

Dieter Gerdemann

"On the fly" mobile access

Redtea Mobile is another such interesting disruptor in the telco space. Imagine your IoT assets are roaming around the world globally. Which telco would you go to in order to buy a data plan, plus device management, which enables you to provision and deprovision your devices globally and on the fly?

Companies are better off disrupting than being disrupted.

Despite these challenges, however, the de global mobile traffic was 7 exabytes in 201 by 2021. That's where Redtea Mobile ● c Redtea Mobile's technology, you could im capacity with enough associated internatio (IMSI), the unique numbers assigned to m globe at wholesale prices, bundling this ca data service, and reselling it to enterprises devices.

The way Redtea Mobile's technology works is that it can reprogram eSIMs on the fly from the cloud, so a device that operates on one mobile network in one country can be reprogrammed to another network on the fly once it crosses the border.

Overview

Redtea Mobile

Redtea Mobile is an embedded SIM turnkey solutions provider

See Full Crunchbase Profile

RedteaMobile

More about Redtea Mobile：Industrial Acknowledgement

21,589 views | Jun 30, 2019, 07:50pm

100 Of The Most Customer-Centric Companies

Blake Morgan Senior Contributor ⓘ
CMO Network
I am a Customer Experience Futurist, Author and Keynote Speaker.

- China Unicom eSIM Alliance Member-1st Batch
- China Mobile IoT Alliance Member
- Member of HUAWEI AIoT Associate
- China National High-Tech Enterprise

- GSMA Associate Member
- CCSA Member
- TAF Member

- "China's 50 Most Innovative Companies of 2016" *by Fast Company China*
- *Forbes* "100 most customer-centric companies"

- Strategic Partnership with Qualcomm
- ISPN partner of Infineon
- 2018 Best Overseas Service Provider for Chinese MVNOs
- Co-hosted WAS#5 with GSMA in Macao
- Deutsche Telekom NuSIM Project Official Partner

RedteaReady
- the 2018 WIOTC award featuring "new technology, new application & new achievement"
RedteaGO
- Meizu 2015 Best partner of the year
- Meizu 2016 Industrial innovation of the Year
- 2017 Flyme Best Product Partner of the Year

THANKS

RedteaMobile

communications@redteamobile.com

China National High-Tech Enterprise
Associate Member of GSMA
Member of CCSA and TAF
China Unicom eSIM Alliance Member - First Batch
China Mobile IoT Alliance Member
Member of HUAWEI AIoT Associate
ISPN partner of Infineon
Deutsche Telekom NuSIM Project Official Partner
The「*China's 50 Most Innovative Companies of 2016*」by Fast Company Magazine
The「*100 Most Customer-Centric Companies*」by Forbes
Proud to co-host GSMA WAS#5 in March 2017, Macau

Website	Facebook	LinkedIn