



THE MNO
INNOVATORS



ROCCO
2021
NOMINEES

CTExcel

China Telecom Global

ROCCO™ 2021



Multi-domestic MVNO and Global IoT Solution CHINA TELECOM GLOBAL January 2021

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EXPLORING
SUCCESS
TOGETHER



Who We Are? (1/2)

China Telecom Global

- China Telecom Global Limited (“CTG”) is a wholly-owned subsidiary of China Telecom Corporation Limited (“China Telecom”), ranked 158th in the Fortune Global 500 in 2020. Established in 2012, headquartered in Hong Kong, China, CTG connects the Asia Pacific region and the world by leveraging on its abundant resources in mainland China.
- China Telecom has branches and affiliates in 42 countries and regions, 200 overseas PoPs, and more than 55.4T capacities in international connectivity bandwidth and intercontinental capacity. By tapping into its network resources of 41 submarine cables (China Telecom was involved in the construction of more than 10 of those cables) and leveraging direct connection to more than 10 neighbouring countries and regions via terrestrial cables, CTG has forged its global layout of service network and network capacity.
- Targeting carriers, multinational corporations and overseas Chinese clients, CTG provides customised and cost-effective integrated communications solutions and diversified telecom services to cater to their global business needs. Its services include internet direct access, internet transit, data services, broadband, unified communications, internet data centre, cloud computing, ICT services, fixed and mobile voice and value added services, professional services, industry solutions, telecom operation consultancy and service outsourcing.

Who We Are? (2/2)

CTExcel



- As one of the world's largest telecommunication service providers, China Telecom has been keeping up with the times, focusing on the development of global operation. In May 2012, China Telecom Global officially launched the mobile virtual network operator (hereinafter referred to as MVNO) business in the UK with its “China Telecom CTExcel”. The UK MVNO business was the first consumer facing mobile communication service from a Chinese telecommunication service provider in the overseas market. In October 2013, China Telecom CTExcel was officially online in France, targeting different customer groups through France Bundles and the European Bundles. These products have been widely acclaimed by local Chinese and Chinese tourists. In May 2015, China Telecom CTExcel landed in America, expanding the territory of China Telecom’s overseas mobile virtual network again. In addition, the preparation work for the Hong Kong, China and Australia MVNO business is also well underway. China Telecom CTExcel expanded its business into Hong Kong, China in March 2017, while it established its world’s first China Telecom CTExcel Store in Causeway Bay, Hong Kong, China in December 2018. In November 2018, it launched the mobile communication service in Canada named as China Telecom CTExcel.
- China Telecom CTExcel brand design combines the name of the company and the expectation for the brand development. It aims to build a bridge for East-West communication and enhance communication between the two places. CT represents the abbreviation of China Telecom; blue is the color of China Telecom trademark; “Excel” conveys the meaning of excellence, representing the brand of excellence and the consistent pursuit of service-oriented spirit. The letter 'C' represented by quotation marks from the West, the letter 'L' represented by traditional book quotes form oriental, showing that East-West dialogue is smooth and convenient.

Overseas Mobility Business



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Including Mainland China, Hong Kong S.A.R. ,Macau S .A . R . ,
UK, France, Italy, USA and Canada, etc.



Business Partnership Models:

- Retail Customer Package
- Enterprise mobility solutions
- Mobile Operator Wholesale



Local Services and Supports:

- 24x7 multilingual Customer Service
- "My CTExcel" online self service portal
- CTExcel Store

Mobile Communication Services

Postpaid / Prepaid Services

- Cross-border and Local Mobile Monthly / Annual Service Plan
- Handset bundle Plan
- Cross-border and Local Prepaid SIM Card
- International Data Day Pass / One-Card Multi-number / IDD / eSIM
- Airtime and Data Pool Sharing

Mobile Value-Added Services

- A2P SMS
- Mobile WiFi
- Mobile Payment
- Smart Watch
- Teleconference

Roaming Solutions

IPX Roaming

Sponsor Roaming

Global Data Wholesale Service

Global Internet of Things (IoT)

Cross-border IoT Services

- M2M / Consumer eSIM services
- Mainland China, Local & Global IoT services
- Resell solutions

Global IoT Connectivity Platform

- Dedicated core network
- Full SIM life cycle management
- Support B2B / B2C models
- Real time diagnostic service
- Open API interface service

Support Wireless Access

- 2G/3G/4G/5G
- NB-IoT
- VoLTE

Cross Industry Solutions

- Automotive
- Logistics
- Smart City
- Manufacturing
- Banking & Finance
- Construction

The Problem

Background

- Lack of seamless multi-national one-stop shop mobile/IoT solution in market (also internal cross border in China)
- Target customers: Chinese Overseas students, MNCs funded by Chinese investors overseas and local Chinese ethical group in various markets including UK, France, Italy, US, Canada and Hong Kong, even MVNOs...



Overseas
Chinese Students



Chinese
Enterprises



Travelers



Multi-national
Enterprises

What the Problem is

- Target customer needs:
- Sign contract with one single operator
- Seamless global coverage
- Reasonable roaming tariff
- Different packages and services
- Competitive local prices
- A high speed of mobile network
- Flexible package options
- Mobile management capability (MVNE)

The Solution (IoT)

The Concept

- New idea - Meet user demand for seamless multi-national IoT solution
- What does **SEAMLESS** mean?
- Easy to manage - Customer signs contract with only ONE operator for GLOBAL deployment
- One-stop shop IoT solution
- Full IoT Eco system
- Provide international seamless coverage, especially for Greater Bay Area (with LTE+CDMA solution and IoT DCP solution)
- Support different innovative applications

The Solution

- Provide global internet of things (IoT) services to enterprise customers and mobile network operators by integrating the strengths of our corporation.
- By leveraging our high-quality global network, eSIM capabilities, facility connectivity management platform and rich knowledge and expertise in the industry, we have built an IoT ecosystem and solutions among different industries and areas, including the internet of vehicles (IoV), public transport, manufacturing, asset tracking and the smart city.
- Our customized packages include, but are not limited to, solution consultation, the development of various SIM cards, 2/3/4/5G and NB-IOT network support, module adaptation and selling, cloud network integrated ecosystem and telecom resources integration.
- We also provide different solutions, such as roaming and IoT-MVNE for mobile network operators, MVNO and MVNE/A.
- Our consumers can access our global network coverage and platform capabilities through our services in order to fully maximise cost-effectiveness and assist in the development of IoT businesses.

The Solution (MVNO)

The Concept

- One brand, one unverified platform supporting global operation in multiple markets
- Meet user demand for mobile communications abroad
- Provide international seamless coverage, especially for Greater Bay Area
- Provide customized solutions to meet users need for frequent travel
- Provide diversified local and cross-regional service plans
- Provide “My CTEExcel” online portal for self-service
- Acting as an enabler to help overseas regional office to develop cross-border products
- Diversified Service Plans are available for different needs. Including Data Day Pass, Mobile data pool sharing and Airtime sharing

The Solution

- Make use of CTG’s MVNO resource in different countries/regions to provide: Voice, SMS, mobile data services and overseas payment, One-Card-Multi-Number, eSIM, a 24-hour bilingual hotline and other value-added services
- One-Card-Multi-Numbers: one SIM card contains an Overseas Mobile Number as primary number and two secondary numbers (Mainland China and Hong Kong). User can enjoy Roaming Data & Voice via primary number hassle free.
- User can keep their Chinese mobile number when they are staying overseas in long-term
- Bind China number to overseas number for receiving voice calls and SMS via China number
- Smart CLI display for One-Card-Multi-Number
- Cross-regional service plans allow users share data usage in Greater Bay Area, using single SIM card.
- Provide prepaid travel SIM cards for use in Mainland, HK and other regions
- “My CTEExcel” online portal allows users manage services anytime and anywhere.
- Roaming voice calls services can be restricted to designated regions, minimizing chance of getting unexpected bills.

The Business Model

Benefits

MVNO

- Provide seamless, consistency and reliable mobile connections in different regions. One-Card-Multiple Number allow users to enjoy Roaming Voice Call at reasonable price. It also allows the caller to enjoy hassle free communications.
- Increase Servicing Flexibility of the Roaming Data & Voice Service for users and for regional branches / other operators to expand their local business and compete with local competitors.
- MVNE capability helps to stimulate the Inbound data usage, thereby increasing revenue in long run. Sophisticated MVNE capability allows the design of dedicated Roaming Voice Call scenario based on regional needs and cost control.
- Effectively stimulate the growth of influx data and speed up the completion of indicators.

Benefits

IoT

- Successfully developed a broad range of business cases, including well-known companies in different industries, using our one-stop shop IoT solution
- Built full IoT eco system
- Revenue from other products including cloud and transmission are also being driven by IoT solution

Costs

- We operate our own core network for MVNO and MVNE
- We leverage the telecom resources from parent company in mainland China and partnership with various MNOs worldwide to manage costs in our global operation.

How We Came Up With The Solution

Our team

- Our MVNO and IoT team including Product Manager, Solution Manager, Business Development Manager, Operation manager, Network Engineer

Our competency

- With our professional team players, which from different sectors, enable us to develop a diversify, complete and tailor-made solution for our target customers.
- Also provide excellent after sales support

The Technology

How technology was used

Cross Border

- The network portion can also realize the technology conversion from GSM/WCDMA in Hong Kong to CDMA1X/CDMA2000 in China mainland, which is the one solution existed in global market considering the legacy of China Telecom Group CDMA investment and the absolute objective to utilize CT Group mainland resources from overseas business perspective.

Global

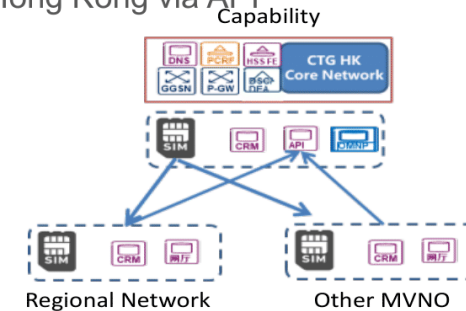
- Leverage on our excellent partnership with different international MNO, supported by our CTExcel local MVNO and international roaming resources

IoT

- We adopt Ericsson IOT Accelerator which got its own core network for connectivity management, along with eSIM platform supporting M2M and consumer eSIM remote provisioning. By integrating with different overseas operators, we provide seamless global connectivity to our IoT customer

MVNE Capability

- Utilize the capacity of CTG core network in Mainland China, HK and Macau and connect the CRM system between regional branch and Hong Kong via API



Proof of Concept

- Upgrade core network to support GSM/WCDMA / IMS and CDMA
- Setup value added platform to support overseas One-Card-Multi-Numbers
- Upgrade billing system to support cross-regional service plans
- Build online portal to manage personal services such bill payment, service plan upgrade, usage enquires etc.

The Solution In Practice

Future Evolution

- Support VoLTE One-Card-Multi-Numbers
- Provide seamless 5G coverage, especially for Greater Bay Area
- Provide cross-regional 5G service plans
- Our MVNO/MVNE capability will be further enhanced to allow the flexibility of customizing the service pack (Roaming Data/Voice/SMS) anytime.
- Integrate and evolve with the platforms with comprehensive device and application enablement platforms for IoT customers, allowing smooth communication between applications and IoT devices. APIs expose data that enables those devices to transmit data to applications, acting as an interface hub to manage the massive connectivity with big data analysis, enhance and help enterprise customers visualize the status of the connectivity and devices status
- Offering variety of IOT-related PaaS and SaaS, save the development effort for enterprise deploying IoT solution in different industries, evolve from existing LTE IoT / NB-IoT deployment and continue to coexist with the coming 5G technology
- Deploying multi-IMSI solution which offering the international seamless coverage for IoT customers

Next Steps

- Upgrade core network to support GSM / WCDMA / IMS / 5G and CDMA
- Upgrade value added platform to support VoLTE One-Card-Multi-Numbers
- Further development in allocating resources from Hong Kong headquarter to other regions and branches over the world as a unified package
- IoT network supporting massive connectivity in 5G networks for the needs of URLLC products, it will be critical for the segment of vehicle traffic control or V2X, industrial application control, health care, Augmented Reality (AR) and Virtual Reality (VR) systems and etc. Result to enhance the services in term of availability, reliability, latency to meet the QoS requirements.

EXPLORING **SUCCESS** TOGETHER



China Telecom Global

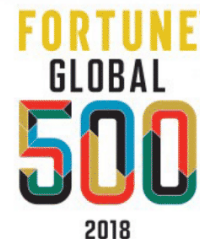
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