华为--成功故事

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| 中文 | 英文 |
| 华为携手石化盈科打造智能工厂2.0|传统的技术手段已经不能满足企业的需求，工业4.0时代的到来，智能制造的兴起，为地球的“节能减排”带来了希望。在中国石化智能工厂的推进过程中，华为携手石化盈科提供了实时的通信能力、实时的计算能力以及整体架构的安全能力。 | Huawei Joins Hands with PCITC to Embrace Smart Factory 2.0|Traditional technologies no longer meet the needs of enterprises. However, the advent of the Industry 4.0 era and the rise of smart manufacturing are bringing great hopes for energy conservation and emission reduction for the Earth. |
| 宝洁：创新技术让生活更美好|在拥抱新技术方面，跨国日用消费品巨头宝洁（P&G）表现卓越，将人们的日常生活推到了新高度。宝洁集团欧洲地区CEO Gary Coombe，讲述了宝洁如何通过增强数字化能力，来提升用户体验。 | P&G: Making the Ordinary Extraordinary with Mobile|The multinational consumer goods giant Procter & Gamble (P&G) uses mobile technology to deliver an amazing customer experience. P&G Europe CEO Gary Coombe explains how. |
| 华为自身的数字化转型实践|华为的数字化转型，是要解决企业的发展问题，解决企业的高效运作问题，目前已经在研发、销售、交付、物流等九大核心业务领域的数字化转型上取得了一些成果，希望这些经验总结能为包括华为客户和合作伙伴在内的其他企业照亮数字化之路 | ABB Leads the Industrial Digitalization Charge|ABB and Huawei have teamed up to solve manufacturing |
| eLTE宽带集群为西班牙Rivas构筑智慧城市神经网络|在西班牙里瓦斯-瓦西亚马德里一所学校门口，一名孩子失踪了，Rivas警察借助eLTE宽带集群解决方案,不到半小时就让父子团聚，他们如何做到的呢？ | Spain’s Rivas-Vaciamadrid Enhances Smart City ‘Nervous System’ Functions with Huawei eLTE Broadband Solution|In front of a school gate in the city of Rivas-Vaciamadrid, a child was missing,Less than half an hour later,the police officer in Rivas found the child by using eLTE Broadband Trunking Solution.How did they do that? |
| 华为Agile POL加速意大利国家电力Enel数字化与可持续发展进程|Enel决定另辟蹊径，期望打造更加智能、快速和经济的办公网络，同时实现简化部署、节省空间、降低能耗。经过慎重考虑，Enel最终选择了华为基于GPON技术的Agile POL解决方案对其已有网络进行升级改造。 | Huawei Agile POL Helps Enel Push Forward Sustainability and Digitization|Enel decided to find new ways to deliver smarter, faster, and more economical OA services, with simpler deployment, and less space and energy. To tackle the problem, Huawei proposed a Passive Optical LAN (POL) solution based on GPON technology. |
| 敦煌：丝路神韵袅千年，智慧旅游新体验|不同于其它地方的智慧城市，其理念、模式侧重于城市管理和服务，敦煌智慧城市建设的核心是智慧旅游。成立于2014年的敦煌智慧旅游有限责任公司，专门负责敦煌智慧城市的建设运营，董事长孙晓强揭示了敦煌如何开拓出智慧旅游引领产业型智慧城市建设的创新模式。 | Dunhuang: On the Silk Road with smart tourism and big data|Unlike other smart cities that focus on urban governance and services, smart tourism lies at the heart of Dunhuang's smart city model. |
| DHL：智慧物流革命正当时|效率、速度和时间是物流行业的重中之重。作为全球物流领军企业DHL供应链的首席信息官及首席运营官，马库斯·沃斯博士为我们解读了如何通过数字化转型和敏捷创新，持续帮助这一物流业巨头，实现其口号“卓越，只为送达”。 | DHL: Adding Digital Logic to Logistics|With more than 350,000 employees operating in 220 countries and territories, DHL leads the world in logistics. Dr. Markus Voss, CIO and COO of DHL Supply Chain, explains how digital transformation can forge processes that will help the freight giant continue to deliver on its slogan: “Excellence. Simply delivered. |
| 迪拜机场携手华为打造智慧机场|迪拜机场预制模块化数据中心是迪拜机场、华为及双方生态伙伴，整合资源进行创新的杰作，能够满足迪拜机场对信息基础设施的要求，为未来10年业务的稳定、高效运行以及业务的数字化和云化提供保障。 | Huawei Partners with Dubai Airports to Build a Smart Airport|The MDCC at DXB represents an innovative masterpiece jointly created by Dubai Airports, Huawei, and other players in the ecosystem. The MDCC meets the information infrastructure requirements specified DXB Plus, helping Dubai Airports to achieve stable and efficient operations, as well as digital and cloud-based business over the next ten years. |
| 风筝之乡潍坊的智慧城市新名片|物联城市就是“智慧城市3.0”，具体逻辑是在物联网的新维度下，重新建构智慧城市，通过人与人、人与物、物与物等城市单元的“万物互联”，完善城市的感知神经系统，进而激活城市大脑，让城市真正智慧起来。 | Shaping Urban Perfection with Government Cloud|The perfect city – one that’s both highly livable and business friendly – is a simple aspiration that’s been around since ancient times. With today's technology, the true smart city is within reach. |
| 华为自身的数字化转型实践|华为的数字化转型，是要解决企业的发展问题，解决企业的高效运作问题，目前已经在研发、销售、交付、物流等九大核心业务领域的数字化转型上取得了一些成果，希望这些经验总结能为包括华为客户和合作伙伴在内的其他企业照亮数字化之路 | Huawei's Own Digital Transformation|Huawei has achieved digital transformation in nine core business domains, the best practices of which can in turn be passed on to enterprises. |
| 探寻百年驾驶乐趣的源动力|在宝马博物馆里一个看似普通的展厅内，四周被汽车设计师和工程师们的工作场景照以及设计心得所围绕，里面的人物、车型可能跨越一个世纪，但是他们的工作理念却有着许多共同点，从中也能体会到百年驾驶乐趣的源动力。 | Explore the Source of 100 Years of Driving Pleasure|In a seemingly ordinary exhibition hall of the BMW Museum, visitors are surrounded by design walls displaying the work photos and design experience of car designers and engineers. The people and vehicle models shown may come from different centuries but their work philosophies have a lot in common, and provide us insights into the source of 100 years driving pleasure. |
| 如何将数字世界带入北大西洋佛得角火山群岛|每个组织都处在数字化转型的关键时期，华为期待把数字世界带入每个组织，构建万物互联的智能世界，而佛得角政务云的建设无疑是必经之路。 | Bringing the Digital World to Cape Verde Archipelago, North Atlantic|It is evident that the construction of Cape Verde’s eGovernment cloud is a necessary step for government, education, medical institutions, and enterprises in Cape Verde to enter a smart world. |
| 工银亚洲以前沿科技驱动跨境金融升级发展|随着中国资本市场的进一步开放，得益于“一带一路”倡议及大湾区发展所带来的机遇，跨境金融业务于过去数年间高速发展。中国工商银行（亚洲）有限公司（简称：工银亚洲）跨境人民币业务自2013年开展以来，截至2017年12月，其人民币清算量超过36万亿人民币，客户逾500间企业，结算货币近20种，有关业务实现两位数增长，人民币存款总额突破300亿人民币。 | ICBC (Asia) makes cross-border banking easy|The Industrial and Commercial Bank of China (Asia) started its cross-border renminbi business in 2013 and has since achieved double-digit growth in its business. How has it made such impressive progress? |
| Turkcell：赢在视频时代|随着公众对移动视频的日益青睐，在短短两年间，Turkcell成功发展了100万TV+用户。展望未来，这家土耳其电信运营商对视频这一新的业务增长引擎充满信心，其市场总监Ismail Butun娓娓道出个中缘由。 | Adding up the Gains with Turkcell’s TV+|Turkcell grew its TV+ subscriber base to 1.4 million in just two years. CMO Ismail Butun explains why and how video is the Turkish telco's new growth catalyst. |
| 四川电信：全光网络跨越宽带数字鸿沟|四川电信通过全光网络的建成，成功解决了多网并行、成本居高不下的问题，大幅度降低了运营成本，为宽带降费和持续发展创造了条件，并积极探索出了一条跨越宽带数字鸿沟，可持续的、良性发展的道路，为全世界宽带普遍服务的落实积累了宝贵的经验。 | Sichuan Telecom: All-seeing with All-Optical|Sichuan Telecom’s all-optical network has slashed OPEX, lowered broadband prices, and solved the problem of running multiple parallel networks. The China Telecom subsidiary sought to bridge the digital divide, resulting in a scheme that’s a globally relevant example of delivering universal broadband services. |
| 中国移动香港：电信云化开拓者|2017年2月，中国移动香港有限公司基于网络功能虚拟化技术的全云化核心网络启动商用发布，是香港电信市场最先进行云化实践的运营商，标志着香港电信业正式迈入云时代。 | A Cloudy View from the Fragrant Harbor|In Hong Kong, where mobile penetration is 230%, site costs come at a premium and service expectations are high. China Mobile Hong Kong brought its A game to cloud transformation. Here's how. |
| 河南联通：分布式云数据中心带来差异化云服务|2017年2月，中国联通河南分公司（以下简称“河南联通”）携手华为成功部署分布式云数据中心，提供属地化的低时延、数据安全隔离和平台统一管理的云服务，有效满足本地政府、医疗、教育和中小企业日益增长的云服务需求。 | Henan Unicom Gets Enterprising with Distributed Cloud Data Centers|Distributed DCs and reusing equipment rooms are the key to Henan Unicom's B2B gains and cloud transformation with Huawei. Find out more. |
| 比亚迪“云轨”：便捷智能的出行神器|作为轨道交通领域的新进入者，比亚迪 历时5年研发而成的云轨，能否延续过 去20年的商业神话，比亚迪董事长兼总裁王传福对此信心满满，他详细讲述了云轨如何成为城市治堵神器，助力城市智能交通体系发展。 | SkyRail: BYD's Silver Bullet for Urban Congestion|Traffic jams and long commutes aren’t new ─ but SkyRail is. BYD’s Chairman and President Wang Chuanfu reveals where the company is at with one of its “Four Green Dreams ”and how the company has made a strong start in the transportation space. |
| 风筝之乡潍坊的智慧城市新名片|物联城市就是“智慧城市3.0”，具体逻辑是在物联网的新维度下，重新建构智慧城市，通过人与人、人与物、物与物等城市单元的“万物互联”，完善城市的感知神经系统，进而激活城市大脑，让城市真正智慧起来。 | Weifang Smart City Lights the Way ahead for China|Find out how this ancient city is making smart IoT moves with pioneering initiatives and shaping up to be true smart city. |
| 聚焦数据，合作共赢：汇丰银行数字化之路|金融业正在发生不可逆转的变化：今天的消费者精通技术，更青睐费率低、透明度高、移动端快捷易用的金融服务；传统银行面临互联网金融的挑战，竞争优势和市场份额不断流失。在此背景下，汇丰银行积极拥抱数字化浪潮，应对金融科技企业的竞争。 | HSBC Puts Partnership and Data at the Heart of Digitalization|Data will drive the future of financial services. Find out how HSBC is approaching digital transformation and the emergence of Fintechs. |
| 数字太保率先迈入数字化时代|2017年，中国太保集团与华为继续深化在数据中心与企业云建设、大数据与人工智能、数字化安全等领域的创新合作，共同推动中国太保云数据中心基础设施建设，打造中国太保行业创新应用，提升中国太保集团的数字化安全水平。 | China Insurance Giant CPIC Steps into the Digital Era|CPIC and Huawei are deepening cooperation in multiple fields, including data center and enterprise cloud construction, big data, artificial intelligence, and digital security. |
| 智慧物流，联接美好未来|顺丰DHL和华为共同打造了园区泊位管理解决方案和创新RFID解决方案。园区泊位管理解决方案实现了园区泊位状态实时感知、联动调度、资产进出库无停留及自动记账。 | Smart Logistics Leads Us to a Brighter Future|SF DHL Supply Chain China (SF DHL) and Huawei jointly developed a campus yard management solution and an innovative RFID solution. With the campus yard management solution put in place, there was a real-time perception of the campus yard status and the associated scheduling. |
| 土耳其航空：最高飞鸟的全新数字化旅程|创立于1933年的土耳其航空公司连续六年荣膺“欧洲最佳航空公司”、2018年度 “土耳其最具品牌价值100强”之首，持续创新，并计划在未来进行更为彻底的数字化转型，进一步稳固国际顶尖航空公司地位。现在让我们一起走进土航，聆听它的转型故事。 | Turkish Airlines Soars on a New Digital Journey|As part of its continuous innovation, the Turkish airline has begun a radical digital transformation to strengthen its position as a leading international airline. With this in mind, let's take a look at its story of transformation. |
| 用聆听拯救雨林|华为与雨林保护组织正开展一系列合作，开发包括采集设备、存储服务、智能分析的创新平台，共同保护热带雨林生态。 | Saving the rainforest by listening|RFCx is working with a complex set of technologies to help protect the rainforest. RFCx creates solar powered audio monitoring systems called Guardians. These Guardians use old Huawei cellphones as the heart of their system. |
| 铂金之都南非勒斯滕堡开采智慧城市金矿|勒斯滕堡智慧城市项目旨在通过使用数字技术来应对这些挑战，通过改善公民安全和参与度，提高生活质量，促进企业发展。 | Rustenburg: World Platinum Capital Deploys Smart City ‘Gold Mine’|The Rustenburg Smart City project aimed to address these challenges using digital information technologies. By improving public safety and civic participation, this project will enhance living standards and facilitate enterprise development. |
| Turkcell：赢在视频时代|随着公众对移动视频的日益青睐，在短短两年间，Turkcell成功发展了100万TV+用户。展望未来，这家土耳其电信运营商对视频这一新的业务增长引擎充满信心，其市场总监Ismail Butun娓娓道出个中缘由。 | China Mobile: Making call waiting profitable with video |
| 重新定义数字包容，未来5年再让5亿人受益于数字技术 | Rustenburg is highly dependent on platinum mining, with more than 50 percent of the city’s population engaged in the industry. Platinum price fluctuations have an immediate and direct impact on the local economy, which in turn highlights the limited social capital and digital technologies which could be used to promote the innovation. |
| 华为智能光伏 | To effectively build Smart Rustenburg, RLM cooperated with multiple companies such as Electronic Connect, an ICT and financial technology company in South Africa; Huawei, a leading global ICT infrastructure provider; Sanchuan Wisdom Technology, a manufacturer of water meters and water supply systems; and Xiamen Lenz Communication, a solution provider for intelligent transportation systems. |
| 重新定义数字包容，未来5年再让5亿人受益于数字技术 | Unified Digital Platforms: Cornerstones of a Smart City |
| 南非勒斯滕堡市（RLM，Rustenburg Local Municipality）建于1850年，是南非西北省最大、人口最多的城市，有太阳城、波之谷、勒斯滕堡自然保护区等旅游景点。作为世界主要铂金矿开采地，勒斯滕堡被誉为世界铂金之都，铂金矿的优势地位也促成了其快速的经济增长和城市扩张，让其成为目前南非发展最快的城市之一，2017年GDP达638亿兰特，占全省21.1%，占全国1.28%，其中采矿业占比74.6%。 | Home to one of the two largest major platinum mines in the world, Rustenburg’s mineral deposits have led to rapid economic growth and urban expansion, making it one of the fastest growing cities in South Africa. |
| 南非勒斯滕堡市（RLM，Rustenburg Local Municipality）建于1850年，是南非西北省最大、人口最多的城市，有太阳城、波之谷、勒斯滕堡自然保护区等旅游景点。作为世界主要铂金矿开采地，勒斯滕堡被誉为世界铂金之都，铂金矿的优势地位也促成了其快速的经济增长和城市扩张，让其成为目前南非发展最快的城市之一，2017年GDP达638亿兰特，占全省21.1%，占全国1.28%，其中采矿业占比74.6%。 | In 2017, Rustenburg’s Gross Domestic Product (GDP) reached USD 4.42 billion (ZAR 63.8 billion), accounting for 21.1 percent of GDP for North West province, and 1.28 percent of GDP for South Africa. The mining industry accounted for 74.6 percent of the city’s GDP. |
| 由于预计铂金的开采将在2040年后下降，为确保勒斯滕堡的发展活力和人民的生活质量，市政府制订了“勒斯滕堡2040年愿景”，期望成为“一个世界级的城市，所有社区都享有高品质的生活”，成为一个互联、有活力、健康、环保、友好、安全、智慧、繁荣、效率、可持续发展的城市。 | Platinum mining is projected to decline after 2040. To ensure the city’s long term vitality and citizens' living quality, in 2014 the Rustenburg Local Municipality (RLM) began to formulate the Rustenburg Vision 2040, with the goal of becoming “a world-class city where all communities enjoy a high quality of life” — a city that is interconnected, energetic, healthy, green, friendly, secure, smart, prosperous, efficient, and sustainable. |
| 第一阶段聚焦在解决目前城市面临的最大挑战。 | The first phase is focused on addressing the city’s biggest challenges. |
| 第三是经济单一。高度依赖铂金开采，超过50％的人口从事采矿业，铂金价格波动直接影响经济，缺乏社会资本和数字技术促进创新。 | Rustenburg is highly dependent on platinum mining, with more than 50 percent of the city’s population engaged in the industry. Platinum price fluctuations have an immediate and direct impact on the local economy, which in turn highlights the limited social capital and digital technologies which could be used to promote the innovation. |
| 勒斯滕堡智慧城市项目旨在通过使用数字技术来应对这些挑战，通过改善公民安全和参与度，提高生活质量，促进企业发展。 | The Rustenburg Smart City project aimed to address these challenges using digital information technologies. By improving public safety and civic participation, this project will enhance living standards and facilitate enterprise development. |
| Electronic Connect由南非电信公司和银行技术专家于2006年创立，在信息技术、电信、移动支付和交易银行领域积累了丰富的专业知识。Electronic Connect CEO Zamo | Electronic Connect is a mobile payments service that was founded by Telkom SA in 2006 in cooperation with bank technology experts. |
| Mthiyane先生表示：“建立和运营智慧城市已经我们的DNA，希望与华为等合作伙伴共同努力，通过不断的创新和可行的方案，让勒斯滕堡市成为一座智慧城市。” | “It is in our DNA to build and operate smart cities,” Electronic Connect CEO Zamo Mthiyane said. “We hope to work with partners like Huawei to make Rustenburg a smart city through continuous innovation and feasible solutions.” |
| 统一的数字平台作为智慧城市底座 | Unified Digital Platforms: Cornerstones of a Smart City |
| 华为以新ICT打造城市神经系统，通过智慧城市数字平台整合物联网（IoT）、大数据、视频云、GIS（地理信息系统）和融合通信五大资源，使智慧城市的各类底层基础资源得以共享使用，并联合合作伙伴构建平台生态系统，共同服务于城市的治理与创新。目前，华为智慧城市解决方案已服务于全球40多个国家的160多座城市，因此能够将丰富经验带到勒斯滕堡智慧城市的建设中。 | Currently, Huawei’s Smart City Solution has served more than 160 cities in more than 40 countries, which has provided extensive Smart City construction experience that is being leveraged to help Rustenburg. |
| 统一的城市运营：智能运营中心（IOC） ，即城市的大脑； | Unified city operations: Intelligent Operation Center (IOC) — the city’s brain |
| 统一的数据传输系统：基于微服务架构的统一数据传输； | Unified data transmission systems: Based on a micro-service architecture |
| 统一的物联网网络：个人物联网网络和宽带网络。 | Unified IoT networks: Individual IoT and broadband networks |
| 在公共安全方面，先进的通信、监控、视频分析和识别系统将有助于警察减少响应时间，提高各部门协同的效率，更快地解决刑事案件，有效控制犯罪率。 | Advanced communications, surveillance, video analysis, and identification systems will reduce police response time and improve department collaboration to quickly resolve criminal cases and effectively reduce crime rates. |
| 汇聚来自各种城市数据（视频监控、智能电表/水表、路灯等） ，实现城市运行可视化，提升城市应急处置能力，促进城市管理和决策科学化与智能化。 | Data from various sources (such as video surveillance, smart meters, and streetlights) can be integrated to visualize city operations, improve the city’s emergency response capabilities, and promote data-driven intelligent city management and decision-making. |
| 通过大数据平台分析数据，进行黑/白名单对比，寻找摄像头创建的大视频数据的链接，并支持视频概要、快速搜索和地图跟踪等功能，能实时显示人、车、物等应急资源在地图上的状态。 | The big data platform analyzes data, checks the data against black/white lists, and finds linkage of big video data created by multiple cameras. In addition, the platform supports video synopsis, quick searching, and map tracking functions to display the status of emergency resources like humans, vehicles, and materials on the map in real time. |
| 在公共事业和资源管理方面，物联网平台和综合支付平台将有助于降低水电成本，同时节省勒斯滕堡市的公共事业成本。 | IoT and integrated payment platforms will help reduce Rustenburg’s overall public utility costs. |
| 全联接的勒斯滕堡将提供适合所有人的城市物联网创新和互联网接入服务。勒斯滕堡物联网平台将连接和管理城市中所有传感设备。基于华为提供的eLTE-IoT和EC-IoT网络连接城市中的所有智能设备，智能灯杆和物联网节点的部署将覆盖整个城市，此外物联网平台还将带来创新的应用和公共服务，将以提供有效的公共资源管理，并降低运营成本。 | Fully connected, Rustenburg will provide urban IoT innovation and Internet access services for everyone. Rustenburg’s IoT platform will connect and manage all sensor devices in the city. Based on Huawei’s eLTE-IoT and EC-IoT networks, all smart devices within the city will be connected. |
| 通过移动支付将公共事业的缴费率从60％提高到95％以上。 | Public utility payment rates will increase from 60 percent to more than 95 percent through mobile payments. |
| 一体化智能路灯可以集成、摄像头、环境传感器、Wi-Fi等，是建设智慧城市的理想载体。智能路灯可通过IoT网络将实时感知数据回传到路灯管理后台，可实现路灯状态实时监控、智能调光、故障检测等多种功能，从而大幅度节电降耗、提升维护效率、提到亮灯率，预计可将功耗降低至少50％。 | Integrated smart streetlights can combine cameras, environment sensors, and Wi-Fi, which are ideal carriers for enabling smart cities. Smart streetlights send real-time sensing data to the back end management system via the IoT network. Multiple functions like real-time status monitoring, intelligent tuning, and fault detection save electricity, reduce power consumption, enhance maintenance efficiency, and improve lighting rates. Power consumption is estimated to be reduced by nearly 50 percent. |
| 综合支付应用系统将整合企业、交通运输、数字支付、出租车系统、水电等智能服务。集中式计费解决方案可连接客户和收费者，支持随时随地付款和多种付款方式。居民可以在线支付水电费，节省90％的时间，使用移动支付将公共事业支付成功率从60％提高到95％以上；也可以在商场、超市和一些小商户实现移动支付，提高支付效率90％；此外还能通过电子卡支付出租车/巴士费用，SME可以使用在线支付来推广其电子商务业务。 | A centralized billing solution connects customers to utility companies, and supports multiple payment methods, anytime and anywhere. Residents can pay water and electricity bills online, saving 90% of time, and mobile payment is used to increase the public utility payment success rate from 60% to 95 percent% or higher. |
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| 矿产资源总有枯竭的一天，但是智慧的金矿将生生不息，只要持续保持领先性。Electronic Connect CEO Zamo Mthiyane先生表示：“勒斯滕堡智慧城市将作为一个样板点，南非其他城市通过实施类似的数字平台和技术，也将较快地建设智慧城市。此外，所有行业都可以从数字平台（物联网、云、大数据、视频监控）中受益，其他非洲城市也可以参考勒斯滕堡的实践，将市政机构、企业、居民更好地联系起来，共创美好未来。” | “Smart Rustenburg will be a demo site,” said Mthiyane. “Other cities in South Africa will quickly become smart cities by implementing similar digital platforms and technologies. In addition, all industries can benefit from the digital platform (the IoT, cloud, big data, and video surveillance). Other African cities can also take Rustenburg’s practice as an example of how to better connect municipal institutions, enterprises, and residents, for a better future.” |
| 故事概览 | Like the story? Give your score. |
| 华为助艾古莱尼市成为南非智慧城市领跑者 | Huawei Helps The City of Ekurhuleni Grow into a South African Smart City Pioneer |
| 如何将数字世界带入北大西洋佛得角火山群岛 | Bringing the Digital World to Cape Verde Archipelago, North Atlantic |
| 南非勒斯滕堡市（RLM，Rustenburg Local Municipality）建于1850年，是南非西北省最大、人口最多的城市，有太阳城、波之谷、勒斯滕堡自然保护区等旅游景点。作为世界主要铂金矿开采地，勒斯滕堡被誉为世界铂金之都，铂金矿的优势地位也促成了其快速的经济增长和城市扩张，让其成为目前南非发展最快的城市之一，2017年GDP达638亿兰特，占全省21.1%，占全国1.28%，其中采矿业占比74.6%。 | Home to one of the two largest major platinum mines in the world, Rustenburg’s mineral deposits have led to rapid economic growth and urban expansion, making it one of the fastest growing cities in South Africa. |
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| 由于预计铂金的开采将在2040年后下降，为确保勒斯滕堡的发展活力和人民的生活质量，市政府制订了“勒斯滕堡2040年愿景”，期望成为“一个世界级的城市，所有社区都享有高品质的生活”，成为一个互联、有活力、健康、环保、友好、安全、智慧、繁荣、效率、可持续发展的城市。 | Platinum mining is projected to decline after 2040. To ensure the city’s long term vitality and citizens' living quality, in 2014 the Rustenburg Local Municipality (RLM) began to formulate the Rustenburg Vision 2040, with the goal of becoming “a world-class city where all communities enjoy a high quality of life” — a city that is interconnected, energetic, healthy, green, friendly, secure, smart, prosperous, efficient, and sustainable. |
| 第一阶段聚焦在解决目前城市面临的最大挑战。 | The first phase is focused on addressing the city’s biggest challenges. |
| 第三是经济单一。高度依赖铂金开采，超过50％的人口从事采矿业，铂金价格波动直接影响经济，缺乏社会资本和数字技术促进创新。 | Rustenburg is highly dependent on platinum mining, with more than 50 percent of the city’s population engaged in the industry. Platinum price fluctuations have an immediate and direct impact on the local economy, which in turn highlights the limited social capital and digital technologies which could be used to promote the innovation. |
| 勒斯滕堡智慧城市项目旨在通过使用数字技术来应对这些挑战，通过改善公民安全和参与度，提高生活质量，促进企业发展。 | The Rustenburg Smart City project aimed to address these challenges using digital information technologies. By improving public safety and civic participation, this project will enhance living standards and facilitate enterprise development. |
| Electronic Connect由南非电信公司和银行技术专家于2006年创立，在信息技术、电信、移动支付和交易银行领域积累了丰富的专业知识。Electronic Connect CEO Zamo | Electronic Connect is a mobile payments service that was founded by Telkom SA in 2006 in cooperation with bank technology experts. |
| Mthiyane先生表示：“建立和运营智慧城市已经我们的DNA，希望与华为等合作伙伴共同努力，通过不断的创新和可行的方案，让勒斯滕堡市成为一座智慧城市。” | “It is in our DNA to build and operate smart cities,” Electronic Connect CEO Zamo Mthiyane said. “We hope to work with partners like Huawei to make Rustenburg a smart city through continuous innovation and feasible solutions.” |
| 统一的数字平台作为智慧城市底座 | Unified Digital Platforms: Cornerstones of a Smart City |
| 华为以新ICT打造城市神经系统，通过智慧城市数字平台整合物联网（IoT）、大数据、视频云、GIS（地理信息系统）和融合通信五大资源，使智慧城市的各类底层基础资源得以共享使用，并联合合作伙伴构建平台生态系统，共同服务于城市的治理与创新。目前，华为智慧城市解决方案已服务于全球40多个国家的160多座城市，因此能够将丰富经验带到勒斯滕堡智慧城市的建设中。 | Currently, Huawei’s Smart City Solution has served more than 160 cities in more than 40 countries, which has provided extensive Smart City construction experience that is being leveraged to help Rustenburg. |
| 统一的城市运营：智能运营中心（IOC） ，即城市的大脑； | Unified city operations: Intelligent Operation Center (IOC) — the city’s brain |
| 统一的数据传输系统：基于微服务架构的统一数据传输； | Unified data transmission systems: Based on a micro-service architecture |
| 统一的物联网网络：个人物联网网络和宽带网络。 | Unified IoT networks: Individual IoT and broadband networks |
| 在公共安全方面，先进的通信、监控、视频分析和识别系统将有助于警察减少响应时间，提高各部门协同的效率，更快地解决刑事案件，有效控制犯罪率。 | Advanced communications, surveillance, video analysis, and identification systems will reduce police response time and improve department collaboration to quickly resolve criminal cases and effectively reduce crime rates. |
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| 登录忘记密码|修改密码没有帐号？立即创建一个 | LoginUser NamePasswordForgot password?|Change passwordNo account?Create one!Privacy|Terms of use |
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| 实时预警，准确上报：实现输电线路情况的实时监控与分析，实时上报告警，减少人工监视的漏报与误报； | Real-time alerts and accurate reporting, including the real-time monitoring and analysis of transmission line conditions, real-time alarms, and fewer false negatives and false alarms from manual monitoring. |
| 系统成本节省：前端就地分析大幅降低了对于公网流量、云端存储与计算资源的占用，整体系统成本降低30%以上。如今输电所共安装2312台配置华为Atlas 200 AI加速模块的视频在线监测装置，实现深圳输电线路通道走廊全覆盖。传统输电人“坐朝问道、垂拱平章”的巡检梦想正成为现实，视频巡检开始改变传统的人工巡检模式。未来，深圳供电局计划在输电线路上安装近3000套输电视频监控终端，通过内置华为昇腾AI处理器，加载自主研发的智能识别算法，实现前端实时智能识别，只将识别结果回传后台。我们已经看到，先进的技术在推动着电力行业的历史变革，为我们的万家灯火注入智能和高效。 | System cost savings. Front-end local analysis has slashed public network traffic and the use of cloud storage and computing resources, cutting system costs by more than 30 percent.Today, SPSB has installed 2,312 online video monitoring devices. Equipped with Huawei's Atlas 200 AI acceleration module, they achieve the full coverage of transmission line corridors in Shenzhen. Carrying out inspections effortlessly from the comfort of the office is now becoming a reality.In the future, SPSB plans to install nearly 3,000 transmission video monitoring devices on the transmission line. With Huawei's Ascend AI chip built in and loaded with the self-developed smart identification algorithms, it will support real-time smart identification at the front end and only return identification results to the back-end. Advanced technology is driving a historical transformation in the power industry, making the systems that power the lights in our homes intelligent and highly efficient. |
| 智能联接：融合5G、人工智能和物联网 | Intelligent connectivity: The fusion of 5G, AI, and IoT |
| 阿斯顿·马丁：关于自动驾驶汽车的新视角 | Aston Martin: A fresh perspective on autonomous vehicles |
| 斯里兰卡Dialog Axiata：畅谈“无线光纤”成功之路 | Wireless Fiber does the talking for Dialog Axiata in Sri Lanka |
| “华为与我们联合开展创新项目合作，重点关注云、AI、物联网等技术。融合以上新技术我们提供仓储运营、货物运输、园区安防、资产管理等服务，将推动更加融合的物流价值链快速发展。” | Behind the leading automobile technologies is the CAE software that simulates and tests fluid mechanics, collision, and power assembly, and High-Performance Computing (HPC) clusters that run day and night. In this way, engineers can obtain simulation results more quickly, ensure high-quality vehicles, and make things possible. This poses multiple challenges for HPC. |
| 预约服务 | The first challenge is energy consumption. The deployment of hundreds of servers on a large scale increases electricity costs, and power consumption cost accounts for a large proportion of the operations cost. Therefore, low power consumption of the server platform and makes energy saving is one of the key requirement. The second challenge is stability. Outages can result in performance deterioration or service interruption, causing direct and potential revenue loss. Therefore, server stability is of paramount importance. The platform must ensure service continuity and reliability, minimize faults that occur on large-scale servers, and ensure timely troubleshooting. Another challenge that cannot be ignored is deployment speed. The rapid expansion of automobile development services increases demands for servers every year. To meet service rollout requirements, but also imposes great challenges to type selection, testing, O&M management, procurement forecasts, production, and delivery. |
| “华为与我们联合开展创新项目合作，重点关注云、AI、物联网等技术。融合以上新技术我们提供仓储运营、货物运输、园区安防、资产管理等服务，将推动更加融合的物流价值链快速发展。” | Although this project deployed only standard servers, Huawei products offer other additional highlights. Like car tests, Huawei performed thousands of tests (including brute force insertion and removal tests and EMC tests) on each server for hundreds of hours to ensure high product quality and reliability. With efficiency design, Huawei’s rack servers provide flexible and large-capacity local storage expansion capabilities, energy saving features and, at the same time, ensured excellent computing performance. Furthermore, Huawei servers were designed using comprehensive energy-saving technologies, such as vector airflow management technology, double-faced cellular board technology, Dynamic Energy Management Technology (DEMT), and dynamic power capping technology, greatly reducing power consumption. |
| 预约服务 | Fortlax, a local vendor, to provide the secure data centers and deliver data center hosting services. Fortlax built a new equipment room specifically for HPC cluster. The site was unique — a former top secure cash handling facility. |
| “华为与我们联合开展创新项目合作，重点关注云、AI、物联网等技术。融合以上新技术我们提供仓储运营、货物运输、园区安防、资产管理等服务，将推动更加融合的物流价值链快速发展。” | Intelligent connectivity: The fusion of 5G, AI, and IoT |
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| 预约服务 | The first challenge is energy consumption. The deployment of hundreds of servers on a large scale increases electricity costs, and power consumption cost accounts for a large proportion of the operations cost. Therefore, low power consumption of the server platform and makes energy saving is one of the key requirement. The second challenge is stability. Outages can result in performance deterioration or service interruption, causing direct and potential revenue loss. Therefore, server stability is of paramount importance. The platform must ensure service continuity and reliability, minimize faults that occur on large-scale servers, and ensure timely troubleshooting. Another challenge that cannot be ignored is deployment speed. The rapid expansion of automobile development services increases demands for servers every year. To meet service rollout requirements, but also imposes great challenges to type selection, testing, O&M management, procurement forecasts, production, and delivery. |
| “华为与我们联合开展创新项目合作，重点关注云、AI、物联网等技术。融合以上新技术我们提供仓储运营、货物运输、园区安防、资产管理等服务，将推动更加融合的物流价值链快速发展。” | Although this project deployed only standard servers, Huawei products offer other additional highlights. Like car tests, Huawei performed thousands of tests (including brute force insertion and removal tests and EMC tests) on each server for hundreds of hours to ensure high product quality and reliability. With efficiency design, Huawei’s rack servers provide flexible and large-capacity local storage expansion capabilities, energy saving features and, at the same time, ensured excellent computing performance. Furthermore, Huawei servers were designed using comprehensive energy-saving technologies, such as vector airflow management technology, double-faced cellular board technology, Dynamic Energy Management Technology (DEMT), and dynamic power capping technology, greatly reducing power consumption. |
| 预约服务 | Fortlax, a local vendor, to provide the secure data centers and deliver data center hosting services. Fortlax built a new equipment room specifically for HPC cluster. The site was unique — a former top secure cash handling facility. |
| “华为与我们联合开展创新项目合作，重点关注云、AI、物联网等技术。融合以上新技术我们提供仓储运营、货物运输、园区安防、资产管理等服务，将推动更加融合的物流价值链快速发展。” | Intelligent connectivity: The fusion of 5G, AI, and IoT |
| “华为与我们联合开展创新项目合作，重点关注云、AI、物联网等技术。融合以上新技术我们提供仓储运营、货物运输、园区安防、资产管理等服务，将推动更加融合的物流价值链快速发展。” | At the westernmost edge of the world map, there is a small dot — Cape Verde (Portuguese: República de Cabo Verde) in the Atlantic between the edge of the African continent and the map frame. Cape Verde, a volcano archipelago located in the mid-Atlantic Ocean, is composed of 10 volcanic islands and has a coastline of 965 kilometers. Cape Verde suffers from poor industry and agriculture due to its unique geographical location; however, the service industry is extremely robust, accounting for more than 70 percent of the country’s GDP and proposing strong demands for information technology development. With informatization as a national strategy, the Cape Verde government is committed to building a more people-oriented government, creating more business opportunities to improve the competitiveness of Cape Verde, developing an open economy to promote economic development, and alleviating poverty through information communication and network technologies. |
| 预约服务 | With the gradual emergence of new eGovernment applications in Cape Verde and the rapid growth of service leasing to third parties, the national data center, with only 200 Virtual Machines (VMs) built in the first phase, was fully loaded, leaving no available space for new applications or services. Organizations in areas that were not connected to the network were still using a paper-based working mode, leading to poor archival management, low work efficiency, and great difficulties in statistics collection and management. The education and medical care resources of the 10 islands could not be effectively shared. Remote areas suffered from sub-par teachers, poor hardware, and a low overall education level, and the government could not effectively obtain the population’s health and medical information in those areas. Due to difficult inter-island transportation, government agencies faced high travel expenses each year. The average travel cost per person was about USD 340 per trip. In this way, the travel expenses of 1,000 persons would reach USD 340,000 per month. An inefficient transportation network also hindered communication between government agencies. |
| 预约服务 | Delivered a national data center with 54 IT standard cabinets covering 200 square meters to the government of Cape Verde, providing information services for not only the government, enterprises, and institutions of Cape Verde, but also surrounding countries. |
| “华为与我们联合开展创新项目合作，重点关注云、AI、物联网等技术。融合以上新技术我们提供仓储运营、货物运输、园区安防、资产管理等服务，将推动更加融合的物流价值链快速发展。” | ‘One cloud’: A converged cloud resource pool, which implements unified delivery, management, and services of the infrastructure through intensive construction. |
| “基于华为公有云IoT服务，使能解决方案快速集成，通过生态共享，将更多的合作伙伴和方案引入物流行业。” | Currently, the Huawei cloud data center solution has served projects in more than 140 countries and regions, including more than 330 eGovernment cloud projects. |
| 预约服务 | Deployed new IT devices and system software and transformed the old data center into the disaster recovery center, providing secure and reliable IT leasing services for government agencies and enterprises in Cape Verde through an active-active data center. |
| 货车司机使用泊位预约管理APP | Another example is the Medical Information System (SIS). It is a connection module used to manage hospitals, monitor the population status, and improve institutions’ functional capabilities. The SIS manages pharmaceuticals, clinical equipment, materials, laboratory diagnosis, and reservations (analyzing a hospital’s appointment information through the Internet and making schedules for doctors based on the results), and collects statistics on hospitalizations, appointments, and deaths. |
| 预约服务 | According to the 2017 International Telecommunication Union (ITU) report, the ICT Development Index (IDI) of Cape Verde ranked No. 4 in Africa, far higher than that of coastal countries such as Nigeria, Angola, Gambia, and Mozambique. Under the regional ICT hub strategy of Cape Verde, NOSi has delivered eGovernment applications and services to neighboring countries in West Africa based on its ICT infrastructure and capabilities and attracted government delegations from more than 40 countries. |
| 解决方案 | Huawei Provides Campus Wi-Fi Solution at the Marina Bay Street Circuit |
| 解决方案 | Huawei ICT Solutions Make Government More Effective |
| 新ICT如何为地球“节能减排” | Leading New ICT Contributes to Energy Conservation and Emission Reduction |
| 当前，面对地球日趋严峻的环境问题，人们越来越多地选择共享单车、电动汽车来支持绿色环保，但在很多时候仍然需要使用石油等不可再生能源。你是否关注到在地球上还剩多少石油来供人类“挥霍”？据保守的专家认为，地球上的石油仅够三四十年，甚至石油危机的到来可能比一般人所预想得还要早。各国政府和有责任的企业都纷纷开发新能源，并持续改进技术以提高石油等能源的采收率和利用率。 | Our Earth faces increasingly grave environmental problems every day. Although more people have realized the significance of environmental protection and have chosen shared bicycles and electric cars as part of their low-carbon lifestyles, yet we still rely heavily on non-renewable energy such as petroleum. How much oil is left and how long will it last? According to estimates from conservative experts, the sustained oil reserves left may last only 30 to 40 years at present rates of consumption, and the next oil crisis may happen much sooner than expected. Governments and socially responsible companies worldwide are intensifying efforts to develop new energy and optimize technologies in order to improve the exploration, production, and utilization of energy such as oil. |
| 传统的技术手段已经不能满足企业的需求，工业4.0时代的到来，智能制造的兴起，为地球的“节能减排”带来了希望。 | Traditional technologies no longer meet the needs of enterprises. However, the advent of the Industry 4.0 era and the rise of smart manufacturing are bringing great hopes for energy conservation and emission reduction for the Earth. |
| 制造属于传统行业，主要包括石油炼化、汽车制造、家电制造、电网、钢厂、化工等。过去，ICT技术在制造行业里属于业务支撑角色，但现在已远不止如此，ICT正在向业务主角演进。由智能工厂、智能物流、智能服务所组成的智能制造已经成为制造行业数字化转型的新方向，而这背后离不开云计算、大数据、IoT、人工智能等新ICT技术的鼎力支持。 | Manufacturing is a traditional industry, and it covers oil refining, automobile manufacturing, appliance manufacturing, power grids, steel mills, chemical plants, and others. ICT systems in the manufacturing industry used to function as support systems, but now they are shifting to work as production systems. Smart manufacturing, which comprises smart factories, smart logistics, and smart services, has become a new direction for digital transformation of the manufacturing industry. The successful implementation of smart manufacturing is impossible without the support of leading new ICT technologies such as cloud computing, Big Data, the Internet of Things (IoT), and Artificial Intelligence (AI). |
| 作为ICT解决方案供应商，华为在油气领域已经有十分成熟的系列解决方案，包括数字油田解决方案、海上油田通信解决方案、数字管道解决方案、智能炼化解决方案和智慧销售解决方案等，涉及无线eLTE、物联网、KunLun服务器、Oceanstor9000高端存储、高性能计算（HPC）、云数据中心、公有云、企业云通信等多系列产品。目前，华为服务于60%的全球TOP20的油气企业，38000公里的油气管道，覆盖41%的主要能源国家和地区。 | Huawei, a leading global ICT solutions provider, offers a portfolio of market-proven solutions for the oil and gas sector, including digital oilfield, offshore oilfield communications, digital pipeline, smart refining, and intelligent sales solutions. These solutions are built upon Huawei’s extensive range of products such as wireless eLTE, IoT, KunLun servers, OceanStor 9000 high-end storage systems, High-Performance Computing (HPC), cloud data centers, public clouds, and cloud-enabled enterprise communications products. As of now, Huawei serves 60 percent of global TOP 20 oil and gas companies, and has worked on more than 38,000 km of oil and gas pipelines, which covers 41 percent of leading energy countries and regions. |
| 2017年4月，石化盈科与华为联合发布了石化智能制造平台，这是继石化盈科与华为签约战略合作之后，双方进一步深入合作所取得的首个重要联合创新成果，也是石化智能工厂2.0建设的核心内容，全面体现了集中集成、物联网接入、IT管控、优化、共享服务、数据处理与分析、人工智能等八项核心能力，未来将会成为流程工业智能制造的“操作系统标准”。智能制造平台融合了云计算、物联网、大数据、虚拟现实、机器学习等ICT新技术，将成为全球领先的流程工业智能制造平台。 | In April 2017, PCITC and Huawei jointly announced a smart manufacturing platform, which is not only the two parties’ first significant joint innovation since they inked strategic partnerships, but also the core part of Smart Factory 2.0 within the Sinopec Group. This platform has eight major capabilities: Centralized integration, IoT access, IT management and control, optimization, shared services, data processing and analysis, and AI. The platform will become a ‘benchmarking operating system’ for smart manufacturing. This smart manufacturing platform also has integrated new ICT technologies such as cloud computing, the IoT, Big Data, Virtual Reality (VR), and machine learning. It is expected to become an industry-leading smart manufacturing platform in the process-centric industry. The eight capabilities of this platform are highlighted as follows: |
| 通过平台集中集成能力，整合石化智能工厂数据与信息，支撑数据资产的集中管控与应用系统的有效集成； | This platform consolidates smart factory data and information, enables centralized management and control of data assets, and allows effective integration with application systems. |
| 通过平台IT管控能力，实现云管理、安全管理、运维管理和统一开发，支撑云资源节点的集中管理、监控和资源分配； | This platform implements cloud management, security management, O&M management, and unified development; and allows for centralized management, monitoring, and resource allocation of cloud nodes. |
| 通过平台共享服务能力，对业务服务和技术服务组件统一管控，为统一开发提供共享的云服务； | This platform centrally manages and controls business and technology service components, and provides shared cloud services to facilitate unified development. |
| 通过平台数据处理与分析能力，挖掘工业大数据的潜在价值，支撑生产异常分析、设备故障诊断与产品质量分析； | This platform unleashes the potential of Big Data and enables production exception analysis, equipment fault diagnosis, and product quality analysis. |
| 华为联合全球合作伙伴匠心推出的FusionCloud智能制造解决方案，具有管理高效、调度敏捷、架构开放等特点，专门针对生产制造行业客户的工业自动化和信息化融合，以实现服务型制造和柔性生产的需求。 | Huawei and global partners join hands to launch a FusionCloud Smart Manufacturing Solution which features efficient management, agile dispatching, and open architecture. This solution is a good choice for customers in the production and manufacturing industries, meeting their needs of industrial automation, information convergence, service-centric manufacturing, and flexible production. |
| 目前，华为制造云解决方案联合了一群行业伙伴如SAP、埃森哲、石化盈科、哈里伯顿（石油石化）、力控（工业组态）等，以全栈式云解决方案来支撑制造行业的设计、生产、供应、物流、营销的端到端管理，实现智能云化和智能服务化；利用大数据分析和挖掘来解决制造企业生产、运维中的深层次问题和痛点，最终帮助客户实现智能管理和构建统一架构的制造云平台。 | This solution is the result of the collaborative efforts of Huawei and a group of industry partners such as SAP, Accenture, PCITC, Halliburton, and ForceCon. By enabling end-to-end management of the manufacturing processes that cover design, production, supply, logistics, and marketing, this full-stack cloud solution makes smart cloud-based and service-oriented manufacturing a reality. Big Data analytics and mining helps manufacturing companies resolve deep-rooted problems and pain points. All these benefits pave the way for building a cloud-enabled manufacturing platform characterized by intelligent management and unified architecture. |
| 也许石油能源枯竭的那一天将不可避免的到来，但我们相信，通过应用云计算、大数据等ICT新技术，可以帮助石油化工等企业更有效、更环保地利用能源，甚至挖掘出更多绿色环保的新型能源。 | The day when we run out of oil will come sooner or later. However, we believe that leading new ICT technologies such as cloud computing and Big Data can play an active role for petrochemical enterprises as they help utilize energy in more efficient and environmental-friendly ways and continue to explore more green new energy sources. |
| 最好的数据存储系统助力比亚迪汽车成为新能源领军者 | BYD Auto Becoming a Leader in New Energy with the Best Data Storage System |
| 一车两人三水壶2014年9月的一天，台风刚过，天气异常闷热，线路二班需要巡视的最后一基输电铁塔刚好在一座山上，二班老班长和他的徒弟顾不上吃午饭，连走带爬终于赶到了山顶，巡查完下山时已经是下午3点多了，喝光了6瓶水。这就是传统人工巡检线路工作的一天，这种巡检模式30年不曾有大的改变。这是南方电网深圳供电局输电管理所魏前虎副主任分享的一个故事。“我们曾经统计过，一名普通线路工人工作30年巡线所走过山路可绕赤道1周。”深圳供电局成立于1979年，是南方电网分立直管的全资子公司，承担深圳市（蛇口除外）的供电任务，供电面积2421平方公里，用户数323万户。深圳目前在运110kV及以上架空线路共计511回3900余公里，独立杆塔7700余基。近些年来深圳的飞速发展，产生了大量增长的输电线路，同时也带来了繁重的电力运维任务，最近十年线路长度增长了接近1倍，但线路维护人员仅从60人增长到80人，“一车两人三水壶”的传统粗放型线路工作模式已经不能适应新时代的新要求。如何高标准地满足特区电力稳定供应，为粤港澳大湾区核心引擎提供动力，保障人民追求美好生活的电力需求，通过科技来寻求变革，成为了深圳输电人的重要使命。为电网构筑智能防线从2019年起，国家电网规划通过三年时间初步建成泛在电力物联网，输电设备物联网是其主要的组成部分。对于打造智慧输电线路，总体建设任务是：全面建设“空、天、地、道”多维协同运检体系，构建输电设备物联网，全面完成智慧输电建设任务；在线监测在500KV以上线路全覆盖，220KV及以上覆盖范围不少于60%，110KV由各省考虑；部署方式为500KV以上逐塔部署，220KV线路隔塔部署；无人机巡检全覆盖110kV以上输电线路。南方电网响应这个规划，致力于建设成世界一流的智能电网，为粤港澳大湾区发展提供一流的能源保障，提出了数字化转型发展的重要战略，同时深圳供电局也是全国首个入围国企双百改革的电网企业，需不断激活自身的创新能力来推动电力数字化转型。深圳供电局率先与华为成立联合创新实验室，这是全球电力行业的首例，期望通过华为前沿技术方案和产品，解决电网在数字化转型过程中面对的问题。实验室主要针对国产CPU、物联网、5G和人工智能分析等领域开展技术研究和应用。智能巡检如有“神助”魏前虎表示，输电线路分布在深圳全市各个区域，设备点多面广，而且大部分位于丘陵山间，传统人工巡视需要跋山涉水，工作强度大，且存在登高、野外作业等多项风险。深圳供电局从2013年开始创新试点应用视频在线监测系统，虽然一定程度上提升了工作效率，但普遍缺乏有效的视频边端智能识别功能，还是需要将视频和图片全部回传后台之后用人工进行分析，造成整个系统边端通讯及供电资源紧张、人工分析量大，无法大规模推广。深圳供电局前期试点过业界传统的输电视频监控和图像抓拍方案，但效果不佳，表现在：信息回传难：采集图像回传消耗大量流量，设备无法长期开启，视频图像需要降低清晰度；监控效率低、效果差：回传数据依赖人力排查，存在漏看误判，拍照间隔长，时效性不高；功耗与可靠性问题：塔杆供电依赖太阳能，设备运行功耗高，长期阴雨天气导致供电不足，设备掉线率高。为了改善上述问题，深圳供电局与华为携手，在边缘侧部署输电视频监控终端，集成Atlas 200 AI加速模块，运行AI推理算法进行就地图像视频分析，及时上传告警。主站部署训练和推理系统，持续优化算法模型，结合管理软件实现模型远程下发部署，快速升级系统功能。 | It was a blisteringly hot day in September 2014, just after a typhoon had passed. The power line team had one last transmission tower to check on their inspection schedule. It just happened to be on top of a mountain. With no time for lunch, the crew leader and his squad half walked, half clambered up to the summit. It was already 3 pm before they had completed the inspection and scrambled down the mountain, consuming six bottles of water. This is a typical working day for those performing traditional, manual power line inspections. The model hasn't changed much in 30 years.This was a story shared by the Deputy Director of the Transmission Management Office of Shenzhen Power Supply Bureau of China Southern Power Grid, Wei Qianhu. "One day, we worked out that an ordinary power line worker during his career will walk along enough mountain roads on his patrol route to travel once around the equator," Wei says. Founded in 1979, Shenzhen Power Supply Bureau (SPSB) is a wholly-owned subsidiary of China Southern Power Grid (CSG). It provides electricity to most of the city of Shenzhen with a total service area of 1,953 km2 and a customer base of 3.05 million.Shenzhen currently has 511 overhead lines at 110 kV and above running over 3,900 km, with more than 7,700 independent towers. Shenzhen's rapid development has seen a many transmission lines spread over a wide area, increasing the O&M workload for electrical power to onerous levels. In the last ten years, power line length has nearly doubled, but the power line maintenance crew has only increased from 60 to 80 people, which doesn’t satisfy current requirements. However, providing a stable, secure, and high standard of power for the Special Economic Zone and the Guangdong-Hong Kong-Macao Greater Bay Area and applying technology to improve capabilities is the main mission of SPSB.Building a smart line of defense for the power gridStarting in 2019, the State Grid plans to invest billions of dollars to build smart transmission lines over three years covering the Guangdong-Hong Kong-Macao Greater Bay Area. The project covers: |
| 前端嵌入式AI推理：提升时效性和准确率，降低回传流量，最优化系统成本。 | Front-end embedded AI reasoning, which improves time efficiency and accuracy, reduces backhaul traffic, and optimizes system costs. |
| 极致低功耗：模块支持多级能效管理，良好适配供电系统，保障整体装置长期稳定工作。 | Extremely low power consumption. The module supports multi-level energy efficiency management and is well adapted to the power supply system to ensure long-term, stable operations for the overall device. |
| 实时预警，准确上报：实现输电线路情况的实时监控与分析，实时上报告警，减少人工监视的漏报与误报； | Real-time alerts and accurate reporting, including the real-time monitoring and analysis of transmission line conditions, real-time alarms, and fewer false negatives and false alarms from manual monitoring. |
| 效率大幅提升：系统部署后，运维班组远程即可浏览线路情况，利用人工智能实现图像的智能识别，大幅降低了人力投入，线路运维工作效率提升显著； | Dramatic increase in efficiency. After the system was deployed, the O&M team could easily view line conditions remotely and use AI for smart image recognition, cutting personnel requirements and boosting the efficiency of power line O&M. |
| 系统成本节省：前端就地分析大幅降低了对于公网流量、云端存储与计算资源的占用，整体系统成本降低30%以上。如今输电所共安装2312台配置华为Atlas 200 AI加速模块的视频在线监测装置，实现深圳输电线路通道走廊全覆盖。传统输电人“坐朝问道、垂拱平章”的巡检梦想正成为现实，视频巡检开始改变传统的人工巡检模式。未来，深圳供电局计划在输电线路上安装近3000套输电视频监控终端，通过内置华为昇腾AI处理器，加载自主研发的智能识别算法，实现前端实时智能识别，只将识别结果回传后台。我们已经看到，先进的技术在推动着电力行业的历史变革，为我们的万家灯火注入智能和高效。 | System cost savings. Front-end local analysis has slashed public network traffic and the use of cloud storage and computing resources, cutting system costs by more than 30 percent.Today, SPSB has installed 2,312 online video monitoring devices. Equipped with Huawei's Atlas 200 AI acceleration module, they achieve the full coverage of transmission line corridors in Shenzhen. Carrying out inspections effortlessly from the comfort of the office is now becoming a reality.In the future, SPSB plans to install nearly 3,000 transmission video monitoring devices on the transmission line. With Huawei's Ascend AI chip built in and loaded with the self-developed smart identification algorithms, it will support real-time smart identification at the front end and only return identification results to the back-end. Advanced technology is driving a historical transformation in the power industry, making the systems that power the lights in our homes intelligent and highly efficient. |
| 智能联接：融合5G、人工智能和物联网 | Intelligent connectivity: The fusion of 5G, AI, and IoT |
| 前端嵌入式AI推理：提升时效性和准确率，降低回传流量，最优化系统成本。 | Why natural language processing is AI’s jewel in the crown |
| 但在项目初期，AI 模型识别蜘蛛猴声音也遇到了不少挑战，主要有两点：首先，雨林组织提供的蜘蛛猴声音样本太少，而且很少有人听过，AI 模型没有足够的学习样本；其次，蜘蛛猴叫声是一种变长声音事件，即持续时长不固定，而且蜘蛛猴叫声又可以细分为3类，每类叫声之间又有不小的差异，这些类别之间也是样本及其不均衡。针对这些问题，华为云AI 技术团队将少量样本与雨林环境进行叠加，生成大量接近真实环境的数据缓解样本过少的问题。然后从“时域”和“频率特征数量”这两个层面着手，将模型的时间检测窗口从1秒降低到了500毫秒，在频率这个范围，频率的特征数量从40提高到96，大大提升了模型检测准确性。 为了更好地帮助AI工程师对蜘蛛猴模型的优化和训练，华为的“动物语言翻译师”会从雨林收集到的声音音频里面，准确地标记出蜘蛛猴声音出现的起止时间。她用一个词来概括了自己的工作角色——AI模型饲养员，因为被她标注的声音数据可以帮助AI模型可以更精准地识别和学习。 | In Costa Rica, Huawei empowered RFCx’s Guardians with HUAWEI CLOUD AI to develop a revolutionary new animal detection model for the endangered spider monkey. The AI model is now assisting biologists and rangers in their efforts to track spider monkeys and develop more efficient conservation efforts. A major threat to the spider monkey, other animals and the rainforest itself, is illegal logging and poachers. Illegal logging accounts for 90% of deforestation, which is destroying the spider monkey’s natural habitat. HUAWEI CLOUD AI is being used to improve upon RFCx’s old chainsaw detection algorithm within the Costa Rican rainforest, improving its detection rate to 96%. |
| 但在项目初期，AI 模型识别蜘蛛猴声音也遇到了不少挑战，主要有两点：首先，雨林组织提供的蜘蛛猴声音样本太少，而且很少有人听过，AI 模型没有足够的学习样本；其次，蜘蛛猴叫声是一种变长声音事件，即持续时长不固定，而且蜘蛛猴叫声又可以细分为3类，每类叫声之间又有不小的差异，这些类别之间也是样本及其不均衡。针对这些问题，华为云AI 技术团队将少量样本与雨林环境进行叠加，生成大量接近真实环境的数据缓解样本过少的问题。然后从“时域”和“频率特征数量”这两个层面着手，将模型的时间检测窗口从1秒降低到了500毫秒，在频率这个范围，频率的特征数量从40提高到96，大大提升了模型检测准确性。 为了更好地帮助AI工程师对蜘蛛猴模型的优化和训练，华为的“动物语言翻译师”会从雨林收集到的声音音频里面，准确地标记出蜘蛛猴声音出现的起止时间。她用一个词来概括了自己的工作角色——AI模型饲养员，因为被她标注的声音数据可以帮助AI模型可以更精准地识别和学习。 | However, monitoring spider monkeys in the rainforest is incredibly difficult and time-consuming. Rangers, biologist and conservationists have to manually track their migration. Tracking was based on personal experience, which was inefficient and prone to human error. Can we use AI to recognize the screams of spider monkeys in order to achieve improved location tracking? Using AI models to help detect spider monkeys can be extremely challenging within the rainforest though. The spider monkey call is very diverse in pitch and length, which is very different from the high-pitched scream we are familiar with. Most people are unfamiliar with these sounds, so being able to differentiate them requires a unique expertise. The chainsaw model has provided similar technical challenges. The original model is used in a real-time rainforest environment. The mosquito sound, which is abundant within the environment, is often misreported as a chainsaw sound. Even a human ear has difficulty differentiating between the two sounds. Huawei needed to retrain the model using mosquito sounds and continuously adjust its accuracy. |
| 另一家汽车制造厂，大量贵重物料进出库的进出库识别采用无源RFID方案，以手持人工扫描为主，容易导致漏检，物料位置和状态更是无法实时获取，导致管理成本高、效率低 。顺丰DHL和华为共同打造了园区泊位管理解决方案和创新RFID解决方案。园区泊位管理解决方案实现了园区泊位状态实时感知、联动调度、资产进出库无停留及自动记账。创新RFID解决方案实现了库内资产自动盘点、精准定位、异常情况追踪，整体提升了供应链的管理效率，使能物流行业数字化转型。 | In car factory B, a great deal of expensive materials entered and exited its warehouses every day. The traditional passive radio frequency identification (RFID) solution was adopted to identify the inbound and outbound operations, and the data was recorded by manual scanning. As a result, there were missed inspections, failures to capture real-time data about the positions and status of materials, which further led to high management costs and low efficiency. Taking these into consideration, SF DHL Supply Chain China (SF DHL) and Huawei jointly developed a campus yard management solution and an innovative RFID solution. With the campus yard management solution put in place, there was a real-time perception of the campus yard status and the associated scheduling. In addition to timely entry and exit, warehoused assets were put under automatic accounting. Besides providing automatic inventory, the innovative RFID solutions enabled warehoused assets to be positioned in precise locations, and related exceptions to be traced. It improved the overall management efficiency of the supply chain, and enabled the digitalization of the logistics industry. |
| 煤海山西相传女娲补天所用的五彩石是用山西所产的煤炭所炼。自古以来，山西就以其丰富的煤炭储量被称为“煤海”，全省有三分之一的地下埋藏着煤，成就了中国成为世界第一大煤炭生产国和第二大煤炭出口国。煤为山西提供了一半以上的财政收入和将近1/20的就业机会。全中国5800多处大小煤矿，年产约36.8亿吨原煤中超过一半的产量都运往电厂，生产71118亿千瓦时的电力，是经济发展的支柱。在煤炭生产中，安全是首要任务。优化煤炭安全生产过程是一件势在必行的工程。科技的进步和发展帮助煤炭安全生产向着现代化、智能化有序迈进。自2010年以来，山西煤矿的事故大幅下降。这得益于《山西打造全国能源革命排头兵行动方案》中煤炭安全高效开采工程要求：大力推进机械化、自动化、信息化和智能化矿山建设，探索“互联网十煤炭开采”，打造煤炭无人（少人）智能开采与灾害防控一体化的采矿新模式。目标是到2020年，煤矿基本实现智能开采，机械装备及智能化控制系统在煤炭生产上全覆盖，重点煤矿区采煤工作面人数减少50%以上；到2030年，实现智能化开采，重点煤矿区基本实现工作面无人化、顺槽集中控制。展望2050年，要全面建成安全绿色、高效智能矿山技术体系，实现煤炭安全绿色、高效智能生产。特别是，人工智能的应用，要聚焦关键岗位、危险岗位，重点研发应用掘进、采煤、运输、安控和救援5大类38种煤矿机器人。对此，山西煤矿安全监察局总工蔡建军表示，“我最关注的指标就是煤矿零死亡，这是我们的终极目标，如果有一天全省全国的煤矿达到这个目标了，那我们实现美好生活的梦想就实现了。”安全生产，危险重重煤矿安全生产的重点问题主要是井下工作场所危险，且危险性随时变化，比如运行中的采煤机和移动的支架、液压支架护帮板未护帮到位等不安全因素，导致附近区域危险性提升。同时，由于井下大量生产设备需要靠人眼判断状态，重复启停操作，面对井下这种作业场所多、设备多、操作枯燥重复繁重的特质，作业人员极易懈怠出错。第二，影响煤矿安全最大的因素是人，人是最大的风险，由于井下作业人员众多且自我约束力差，往往因监管不到位造成皮带坐人，追赶猴车，携带超规物品等三违行为发生，造成安全事故。而且“人管人”存在人情、懈怠、造假等风险，比如由于钻探造假，导致透水事故的发生，本质是人管人不到位的问题。第三，现有自动化信息也存在瓶颈，一是有监控盲区，二是现有自动化系统缺乏智能感知能力，无法对作业场所环境是否安全、人的行为是否规范、设备的状态是否正常，做出类人的判断。另外如今年轻人不愿下井，“装备替人”也是形势所迫。精英数智总经理赵存会总结道：“造成煤矿生产不安全因素体现在人的不安全行为、物的不安全状态、管理的不安全因素三个方面。人工智能已经擅长解决相同/相似场所的重复性工作，将人类从传统劳动中解放出来，但是，煤矿安全生产迫切需要人工智能扩大自动化的范围和信息化的深度。”攻坚克难，智能先行在促进煤矿实现智能化发展方面，基于人工智能、大数据等高新技术构建“煤矿大脑”解决方案，可全方位解决煤矿安全生产问题，提高工作效率和监管效率。在危险场所，“煤矿大脑”可替代人的枯燥重复工作，比如通过计算机视觉技术，进行刮板输送机监测，减人增效。“内蒙古某煤矿年产2170万吨，全矿现有人员900余人。目前井下连掘（采）生产，同时有10台刮板机在工作，每班每台需要1人进行专门的启停操作，一班需要10人，三班需要30人。如果用装备取代这30人，一个工人年费用按20万计，则一年可节省600万元。高效的企业首先来自先进的理念——‘宁花百万上装备，不花一万增一人’。”“煤矿大脑”可提示人的不安全行为（三违）看护人，比如通过计算机视觉技术，识别皮带坐人、追赶猴车及携带超规物品、轨道行车不行人等不安全行为，可以反馈到现场监控系统上报警提示，也可以形成软件记录，用于安全考核。识别人员工作场所物环状态改变保护人，比如通过计算机视觉技术，识别采煤机运行过程中架前有人作业、液压支架护帮板未护帮到位、采煤机喷雾不足等物环的不安全行为，可以反馈到广播系统报警提示，也可以形成软件记录，用于安全考核。工程质量管理、生产过程管理不靠人，比如探放水打钻识别，无须管理者现场监督检查和验收，作业者实时收到验收结果，工作不到位的地方直接提示，帮助现场改 进。“计算机视觉技术让安全管理不靠人，通过识别皮带空载率、皮带堆煤、皮带跑偏等状态，进行远程提醒或将信号提供给皮带控制系统联动停机。还帮助我们识别水泵房巡检是否按时和到位管理行为，进行现场提示，并生成巡检报表。识别调度室缺岗管理行为，并形成软件记录和报表，用于日常考核。”“利用智能感知信息扩大自动化能力，以及驱动信息化的深入，实现煤矿现场安全的三个闭环，自动感知作业人员‘三违’行为发出声光报警，并自动生成‘处罚单’，像治理交通闯红灯和超速一样治理违章，提前发现和消除隐患，为煤矿智能化提供支撑。”赵存会说。美好的智能生活蓝图人工智能在煤矿行业发展已经超过十年，尤其是在自动化对煤矿减人、提高生产效率上取得了巨大的成就。“煤矿大脑”作为华为、精英数智与煤科总院合作的产物，是华为“平台+AI+生态”战略在煤炭行业的一次集中呈现。华为FusionCube智能边缘一体机为煤矿大脑提供了强大的基础算力和管理支撑，通过精英数智的算法能力，为煤矿大脑提供人工智能模型，预测预警算法和专家模型。目前，“煤矿大脑”在全国包括山西、内蒙古、陕西等大量的煤矿进行了落地使用，实现了煤矿探水作业、瓦斯抽采作业等从井下验收的方式变成井上验收，极大的提升了实现煤矿生产效率，同时远程对作业合规，施工合规提供了智能的判断和告警，给煤矿打造了一个坚实的安全堡垒。煤矿大脑帮助煤矿企业减少矿井作业人员10%，看护人、保护人避免安全事故，识别和预警影响连续生产的异常状况提高煤矿10%的有效工时，解放煤矿管理人员使其更多精力优化工艺，避免“人管人”；减少矿井作业人员和提高煤矿连续性生产可创造的直接经济效益，即使是年产百万吨的煤矿，也在3000万以上。面向未来，在人工智能等先进技术加持下的智慧煤矿要继续扩展感知能力，增加听觉感知能力，并基于已有的物联传感数据，整合触觉、味觉、嗅觉感知能力，为装备厂商赋能升级为智能装备（机器人）。煤矿安全监察局总工蔡建军谈道，希望华为投入技术力量，与矿业生产各方高度合作，推进人工智能在山西煤矿生产的应用，实现零死亡的目标。山西的煤矿企业一改传统的煤尘飞扬景象，在青山林木掩映中，煤炭经过封闭式皮带走廊运输，直接进入洗煤厂洗选，实现煤炭不落地。煤业矿区绿树成荫、环境整洁，美好的智能生活蓝图正徐徐展开。 | Three UK: From building capacity to sci-fi |
| 智能联接：融合5G、人工智能和物联网 | Intelligent connectivity: The fusion of 5G, AI, and IoT |
| 提示尊敬的用户，您的IE浏览器版本过低，为获取更好的浏览体验，请升级您的IE浏览器。升级 | ReminderTo have a better experience, please upgrade your IE browser.upgrade |
| 登录忘记密码|修改密码没有帐号？立即创建一个 | LoginUser NamePasswordForgot password?|Change passwordNo account?Create one!Privacy|Terms of use |
| “人工智能（AI）让我能够训练机器，训练算法，让它们帮助我探测物种。现在，我正在努力搜集20万条数据。如果是我自己进行分析，每天都听要花60年的时间。没有人工智能，我无法对这些大型数据集进行分析。我们将会使用这些数据，找到不同动物的叫声，然后制作出不同物种的栖息分布图。” | “AI basically will allow me to train a machine, to train an algorithm to detect the species. At the moment I am collecting 200,000 of data. It will take 60 years of my life, every single day if I want to listen to it. So, without AI, we can’t physically analyze these large data sets. We will then use that data to find the different calls of the animals, and then use these data to give us a distribution map of where the different animals are.” |
| 南非勒斯滕堡市（RLM，Rustenburg Local Municipality）建于1850年，是南非西北省最大、人口最多的城市，有太阳城、波之谷、勒斯滕堡自然保护区等旅游景点。作为世界主要铂金矿开采地，勒斯滕堡被誉为世界铂金之都，铂金矿的优势地位也促成了其快速的经济增长和城市扩张，让其成为目前南非发展最快的城市之一，2017年GDP达638亿兰特，占全省21.1%，占全国1.28%，其中采矿业占比74.6%。 | Home to one of the two largest major platinum mines in the world, Rustenburg’s mineral deposits have led to rapid economic growth and urban expansion, making it one of the fastest growing cities in South Africa. |
| 由于预计铂金的开采将在2040年后下降，为确保勒斯滕堡的发展活力和人民的生活质量，市政府制订了“勒斯滕堡2040年愿景”，期望成为“一个世界级的城市，所有社区都享有高品质的生活”，成为一个互联、有活力、健康、环保、友好、安全、智慧、繁荣、效率、可持续发展的城市。 | Platinum mining is projected to decline after 2040. To ensure the city’s long term vitality and citizens' living quality, in 2014 the Rustenburg Local Municipality (RLM) began to formulate the Rustenburg Vision 2040, with the goal of becoming “a world-class city where all communities enjoy a high quality of life” — a city that is interconnected, energetic, healthy, green, friendly, secure, smart, prosperous, efficient, and sustainable. |
| 勒斯滕堡智慧城市项目旨在通过使用数字技术来应对这些挑战，通过改善公民安全和参与度，提高生活质量，促进企业发展。 | The Rustenburg Smart City project aimed to address these challenges using digital information technologies. By improving public safety and civic participation, this project will enhance living standards and facilitate enterprise development. |
| Electronic Connect由南非电信公司和银行技术专家于2006年创立，在信息技术、电信、移动支付和交易银行领域积累了丰富的专业知识。Electronic Connect CEO Zamo | Electronic Connect is a mobile payments service that was founded by Telkom SA in 2006 in cooperation with bank technology experts. |
| Mthiyane先生表示：“建立和运营智慧城市已经我们的DNA，希望与华为等合作伙伴共同努力，通过不断的创新和可行的方案，让勒斯滕堡市成为一座智慧城市。” | “It is in our DNA to build and operate smart cities,” Electronic Connect CEO Zamo Mthiyane said. “We hope to work with partners like Huawei to make Rustenburg a smart city through continuous innovation and feasible solutions.” |
| 统一的数字平台作为智慧城市底座 | Unified Digital Platforms: Cornerstones of a Smart City |
| 华为以新ICT打造城市神经系统，通过智慧城市数字平台整合物联网（IoT）、大数据、视频云、GIS（地理信息系统）和融合通信五大资源，使智慧城市的各类底层基础资源得以共享使用，并联合合作伙伴构建平台生态系统，共同服务于城市的治理与创新。目前，华为智慧城市解决方案已服务于全球40多个国家的160多座城市，因此能够将丰富经验带到勒斯滕堡智慧城市的建设中。 | Currently, Huawei’s Smart City Solution has served more than 160 cities in more than 40 countries, which has provided extensive Smart City construction experience that is being leveraged to help Rustenburg. |
| 统一的城市运营：智能运营中心（IOC） ，即城市的大脑； | Unified city operations: Intelligent Operation Center (IOC) — the city’s brain |
| 统一的数据传输系统：基于微服务架构的统一数据传输； | Unified data transmission systems: Based on a micro-service architecture |
| 统一的物联网网络：个人物联网网络和宽带网络。 | Unified IoT networks: Individual IoT and broadband networks |
| 在公共安全方面，先进的通信、监控、视频分析和识别系统将有助于警察减少响应时间，提高各部门协同的效率，更快地解决刑事案件，有效控制犯罪率。 | Advanced communications, surveillance, video analysis, and identification systems will reduce police response time and improve department collaboration to quickly resolve criminal cases and effectively reduce crime rates. |
| 汇聚来自各种城市数据（视频监控、智能电表/水表、路灯等） ，实现城市运行可视化，提升城市应急处置能力，促进城市管理和决策科学化与智能化。 | Data from various sources (such as video surveillance, smart meters, and streetlights) can be integrated to visualize city operations, improve the city’s emergency response capabilities, and promote data-driven intelligent city management and decision-making. |
| 通过大数据平台分析数据，进行黑/白名单对比，寻找摄像头创建的大视频数据的链接，并支持视频概要、快速搜索和地图跟踪等功能，能实时显示人、车、物等应急资源在地图上的状态。 | The big data platform analyzes data, checks the data against black/white lists, and finds linkage of big video data created by multiple cameras. In addition, the platform supports video synopsis, quick searching, and map tracking functions to display the status of emergency resources like humans, vehicles, and materials on the map in real time. |
| 在公共事业和资源管理方面，物联网平台和综合支付平台将有助于降低水电成本，同时节省勒斯滕堡市的公共事业成本。 | IoT and integrated payment platforms will help reduce Rustenburg’s overall public utility costs. |
| 全联接的勒斯滕堡将提供适合所有人的城市物联网创新和互联网接入服务。勒斯滕堡物联网平台将连接和管理城市中所有传感设备。基于华为提供的eLTE-IoT和EC-IoT网络连接城市中的所有智能设备，智能灯杆和物联网节点的部署将覆盖整个城市，此外物联网平台还将带来创新的应用和公共服务，将以提供有效的公共资源管理，并降低运营成本。 | Fully connected, Rustenburg will provide urban IoT innovation and Internet access services for everyone. Rustenburg’s IoT platform will connect and manage all sensor devices in the city. Based on Huawei’s eLTE-IoT and EC-IoT networks, all smart devices within the city will be connected. |
| 通过移动支付将公共事业的缴费率从60％提高到95％以上。 | Public utility payment rates will increase from 60 percent to more than 95 percent through mobile payments. |
| 一体化智能路灯可以集成、摄像头、环境传感器、Wi-Fi等，是建设智慧城市的理想载体。智能路灯可通过IoT网络将实时感知数据回传到路灯管理后台，可实现路灯状态实时监控、智能调光、故障检测等多种功能，从而大幅度节电降耗、提升维护效率、提到亮灯率，预计可将功耗降低至少50％。 | Integrated smart streetlights can combine cameras, environment sensors, and Wi-Fi, which are ideal carriers for enabling smart cities. Smart streetlights send real-time sensing data to the back end management system via the IoT network. Multiple functions like real-time status monitoring, intelligent tuning, and fault detection save electricity, reduce power consumption, enhance maintenance efficiency, and improve lighting rates. Power consumption is estimated to be reduced by nearly 50 percent. |
| 综合支付应用系统将整合企业、交通运输、数字支付、出租车系统、水电等智能服务。集中式计费解决方案可连接客户和收费者，支持随时随地付款和多种付款方式。居民可以在线支付水电费，节省90％的时间，使用移动支付将公共事业支付成功率从60％提高到95％以上；也可以在商场、超市和一些小商户实现移动支付，提高支付效率90％；此外还能通过电子卡支付出租车/巴士费用，SME可以使用在线支付来推广其电子商务业务。 | A centralized billing solution connects customers to utility companies, and supports multiple payment methods, anytime and anywhere. Residents can pay water and electricity bills online, saving 90% of time, and mobile payment is used to increase the public utility payment success rate from 60% to 95 percent% or higher. |
| 综合支付应用系统将整合企业、交通运输、数字支付、出租车系统、水电等智能服务。集中式计费解决方案可连接客户和收费者，支持随时随地付款和多种付款方式。居民可以在线支付水电费，节省90％的时间，使用移动支付将公共事业支付成功率从60％提高到95％以上；也可以在商场、超市和一些小商户实现移动支付，提高支付效率90％；此外还能通过电子卡支付出租车/巴士费用，SME可以使用在线支付来推广其电子商务业务。 | In addition to public utilities, mobile payments can be implemented in shopping malls, supermarkets, and small businesses to increase payment efficiency by 90 percent. In addition, taxi and bus fares can be paid through electronic cards. Small- and Medium-sized Enterprises (SMEs) can use online payments to promote e-commerce. |
| 矿产资源总有枯竭的一天，但是智慧的金矿将生生不息，只要持续保持领先性。Electronic Connect CEO Zamo Mthiyane先生表示：“勒斯滕堡智慧城市将作为一个样板点，南非其他城市通过实施类似的数字平台和技术，也将较快地建设智慧城市。此外，所有行业都可以从数字平台（物联网、云、大数据、视频监控）中受益，其他非洲城市也可以参考勒斯滕堡的实践，将市政机构、企业、居民更好地联系起来，共创美好未来。” | “Smart Rustenburg will be a demo site,” said Mthiyane. “Other cities in South Africa will quickly become smart cities by implementing similar digital platforms and technologies. In addition, all industries can benefit from the digital platform (the IoT, cloud, big data, and video surveillance). Other African cities can also take Rustenburg’s practice as an example of how to better connect municipal institutions, enterprises, and residents, for a better future.” |
| 华为助艾古莱尼市成为南非智慧城市领跑者 | Huawei Helps The City of Ekurhuleni Grow into a South African Smart City Pioneer |
| “澳电通过智能电网技术的应用，有效提升了供电的稳定性及服务质量。长期以来，供电可靠性指标一直处于全球的领先水平，平均服务可用指数在99.9998%。”澳门电力股份有限公司的电力系统调度部总监刘筱驹先生，在澳电大楼内侃侃而谈，不远处的港珠澳大桥像一条巨龙，舞动在蔚蓝的海湾之上……澳门电力工业的新挑战澳门开埠至今已有450多年。说起澳门，给人的印象是中西合璧、多元文化共存的城市，这里综合了中国与欧洲的文化色彩，有着众多中葡特色的旅游景点。澳门电力工业的发展同样历史悠久，它为澳门的繁荣作出了卓越的贡献。澳电（澳门电力股份有限公司Companhia de Electricidade de Macau – CEM, S.A.）是拥有在澳门特别行政区输送、分配及出售高、中和低压电力的公共供电服务专营机构。澳电亦拥有发电设施。澳门的输电网由22座主变电站、6座客户高压开关站，以及长达293公里的66千伏、110千伏及220千伏高压电缆所组成。澳门电网通过两个110千伏联络通道和两个220千伏联络通道和中国南方电网互联。澳电几乎所有的电网由地下电缆构成。澳门的面积只有约32平方公里，而最高用电负荷已经超过100万千瓦，负荷密度相当高。澳门总用电量于过去十年的升幅近55%，这是由于多个大型基建及酒店娱乐项目相继落成和投运，以及智能生活模式的迅速发展，越来越多市民及商户于其住宅及商业场所内装设各种自动化设备。澳门的供电网络由地底电缆组成，要做好这些大型项目及旧区重建的供电配套，必须牵涉开挖道路工程，这对市民出行造成某种程度的不便，这对澳电来说是一项挑战，刘筱驹介绍道。此外，澳电认为可持续发展的经营方式对城市是否能永续发展十分重要，在保护环境的条件下既满足市民对电力的需求，又以不损害下一代的需求为前瞻的发展模式，是另一项挑战。同时，澳门作为国际化的城市，对供电质量及服务质量的要求都非常高，澳电需要借助各种先进的科技应用才能为用户提供优质的电力和服务。智慧电网，凝聚动力澳电一直不遗余力地推广新技术的应用，如在2000年就开始实施配网自动化，并于2005年就全面实现配网自动化。澳电在2007年开始采用数字化变电站，在2008年开始试点中压闭环控制技术，并在同年开始使用停电管理系统等。澳电通过这些智能电网技术的应用，有效提升了供电的稳定性及服务质量。长期以来，澳电供电可靠性指标一直都处于全球的领先水平，平均服务可用指数在99.9998%，即5个9的水平，最好时可达到6个9，系统平均停电时间持续在约2分钟的水平。澳电目前正在加紧实施智能计量项目、设备状态实时检测等资产管理项目，以及电动汽车充电管理系统、分布式光伏系统等，另外澳电也在积极研究共同管道、智慧街灯等新的技术应用，这些都必将进一步提升澳电的服务品质。随着近年澳门城市的急速发展，澳门社会对于电力供应的要求也相应不断提升。刘筱驹说：“虽然澳电在电力供应可靠性的各方面数据都已达到世界先进地区前列的水平，但是提升澳电服务品质仍然是我们每年的主要努力方向。” “我们也在尝试物联网的应用，例如利用遍布各家各户的电表，及各个街道的路灯，构建全新的物联网，能更快速地了解用户实时的用电情况，并对各用电装置的隐患或故障有更快捷的反应，并通过这些数量众多的节点采集数据，形成专属的大数据，进行智能化的管理。” 智慧电网指的是以物理电网为基础，将现代先进的传感测量、通讯、资讯等技术与物理电网高度集成而形成的新型电网。智能电网的不断发展，对ICT技术的需求也在不断增加。“为了解决网络的可靠性问题、带宽问题、网络安全问题、多系统的互联问题、IT/OT融合问题，以及各种应用需求及新技术不断涌现等问题，我们无论从电力系统内部通讯、IT网络的架构及第三方服务提供等方面，都要不断研究、规划和改善我们的服务。” “对于ICT的基础架构的挑战，按我们的初步理解应该是基础架构、基础设施与行业应用类软件的深度融合。而基础架构很大程度上影响了业务形态，对于澳电来说除了本身的原有业务外，在新时代可能还会发展其它业务，在制定澳电的ICT基础架构时可能就需要考虑更多的因素。” 谈到澳电对智慧电网的发展整体规划和管理挑战时，刘筱驹表示，2016年，澳电开展了对智能电网路线图的更新研究，进一步提出IT/OT系统架构及流程，以及网络安全的重要性。对于澳电来说，培养技术人才、规划和实施智能电网的技术确实是很大的挑战。澳电智慧电网的发展是对澳门智慧城市发展的积极支持，期望对澳门智慧城市的目标：宜居、宜业、宜行、宜乐和宜游起到积极的支撑作用。在智慧电网的建设过程中，华为为澳电提供了可靠、易扩展、易管理的电力通信传输网络，照亮了澳门这座美丽的亚洲娱乐之都。网络整体容量及业务能力极大提高，满足各业务部门对当前及未来的需求；同时，避免老旧网络可能带来的业务中断风险，安全及可靠性得到了极大的提高；同一张网络内各业务间隔离、自恢复能力极大提高，对网络的管理及监控能力也得到了持续提升。可持续发展，注入绿色动力澳电矢志于成为亚洲领先的能源服务供应商，一直以承担社会责任为己任，坚守可持续发展观。澳电认为充足稳定、价格合理、清洁高效是能源选择的核心三要素。基于澳门寸土寸金、商业经济极度发达的城市特点，特区政府制定了以南方电网输入为主、本地发电为辅的能源供应策略。对此，基于前瞻性的视角，澳电为改善环境，进一步在清洁能源、供电安全、电力科技发展方面做出规划，引领清洁能源消费，期望为澳门智慧城市建设注入绿色动力。为了确保供电的稳定性，澳门需要保持一定的本地发电比例，澳电正在规划建设天然气联合循环发电机组，以及其它的一些可再生能源。刘筱驹表示，由于澳门城市面积、海域面积限制，难以大规模建设可再生能源，澳电把可再生能源部署作为中长期战略。澳电希望将来可在大湾区参与建设可再生能源，如海上风电、太阳能光伏发电，甚至参与建设抽水蓄能等水电可再生能源，参与建设天然气联合循环发电项目。澳电的目标是到2030年，在大湾区清洁能源权益装机容量覆盖澳门自南方电网输入的电力容量，在维持电价合理的前提下，实现电力能源清洁化，降低排放，实现澳门的可持续发展。为确保整体市民的福祉，澳电也致力于以尊重所有受影响群体为基础，采用可持续发展的理念提供服务。故此，澳电根据国际标准，如ISO9001、ISO14001、OHSAS18001、ISO14064、ISO20000建立了一个完善的管理系统，为公司在管理安全、健康、环境及质量领域上制定了良好框架，并尽力在平衡各方需求下，履行对社会的责任和支持城市的发展。刘筱驹说：“华为与澳电在电力数据传输网、OT系统基础设施建设及中压通信网等方面均有合作。我希望华为能在更多方面为澳电提供优越的服务，帮助澳电能以更大的优势融入大湾区的发展。” 未来，澳电将以智慧能源与可持续发展为出发点，实现能源管理智慧化、清洁化，以支持澳门特区政府智慧城市发展，并积极参与“一带一路”和大湾区建设。我们相信，澳门电力工业将成为推动澳门特区进一步繁荣发展的重要基石。 | Three UK: From building capacity to sci-fi |
| 智能联接：融合5G、人工智能和物联网 | Intelligent connectivity: The fusion of 5G, AI, and IoT |
| 三联虹普是一家专注于合成纤维及其原料生产技术及装备领域的高新技术企业，致力于整合行业优势，搭建“互联网+”信息服务平台，建立行业大数据体系，实现金融、技术、信息的三联融合。三联虹普董事、战略投资部总经理张敏喆表示，AI技术带来的生产柔性，远超人力，将帮助智能制造行业加速升级。传统制造业的新机遇合成纤维制造行业对多数人是陌生的，但纺织行业大家就很熟悉。从前，纺织行业是关系国计民生的基础行业，放眼全球，也是这样的情况。纺织业其实也就是合成纤维制造业。我们的生活中充满大量的合成纤维，比如80%的食用纤维是合成纤维；还有我们身上穿的棉麻丝毛制品，天然的纤维含量很低。为什么会出现这个出乎意料的情况呢？张敏喆谈道：“这是因为天然纤维受耕地面积的影响，产量不高，而且生产方式是高污染的，合成纤维恰恰在这两个方面有优势，这使得合成纤维的需求变大。”合成纤维是美国杜邦发明的，它的产业链从美国拓展到欧洲，再到日本，再到中国台湾。中国大陆大规模进入合成纤维行业前，台湾是该产业全球流转的前一站，上下游的配套非常完善。“举一个例子，韩国东大门很多人都知道，东大门如果想用新材料做一件衣服，使用美国或日本的供应链，至少需要两周的时间才能打板，而台湾只需要两天。”台湾有很强的订单承接能力，这就是生产的柔性。这个行业如果叫武林世界，台湾就是武林至尊，因为能配套的都配套了，能完善的都完善了，供应链响应效率很高，产品质量也很高。跟传统纺织业不同，合成纤维行业是类似石油化工的连续性的资本密集型产业。目前，我国合成纤维产量占全球的50%。张敏喆说：“因为我国有大量的民生需求，所以形成了最大最高效最先进的产能。产能的后发优势，极大弥补了供应链协同的缺失，也形成了未来两大发展方向。第一是产业链协同，协同后将轻易战胜国际上的竞争对手。第二，合成纤维行业会有健康持久的发展，具备世界级的供需两侧的竞争力，会为合成纤维行业的集成解决方案提供发展机会。我们拥有核心工艺技术，水平和起点都很高，能够给行业提供有价值的生产线，能够让行业的客户在生产过程中产生更高效益。”智能制造释放生产柔性潜能工业互联网的门槛比较高，需要参与者了解行业的工艺原理，业务开展的规则等。张敏喆用一句话概括：“在工业领域，比正确解决需求更难的，是提出正确的需求。”如果提出的需求不对，所有的事情都事倍功半。“这可能也是华为进入工业领域时会产生的困惑，因为客户提出的需求是随机的，顺序是打乱的，难度也没有区分，而且客户对数据不了解，他不知道你能帮助他做什么，他也不知道他需要提供什么。这个过程产生了非常大的资源浪费。”如何快速理解某个细分领域的业务开展规则和技术诀窍的逻辑？张敏喆说：“我认为，与工程技术服务公司合作是理想的选择，三联虹普就是这样的公司。我们是合成纤维行业技术的所有者和产线的使能者，服务于行业各个层级的客户，具备真正的服务能力，可以帮助华为应对不同的客户需求。这样一来，华为只需要做好平台，提供通用型的解决方案，不必直接扎根于企业，所以说跟三联虹普合作是很好的选择。”“我认同华为对数据的承诺，即上不碰应用、下不碰数据。工业领域跟消费领域不同。消费领域是用不断的产品更新，刺激消费者的眼球。工业领域就比较严肃，而且重视并保护各个渠道，也就是说客户不会轻易共享数据和信息。我们提供服务的前提是，必须确保所有渠道的安全，使客户能够有效生产，确保产业链上下游的信息安全。”华为有全栈全场景的AI解决方案，可以在硬件、软件上支持物联网、AI多个技术领域，是优秀的系统集成伙伴，张敏喆表示。比如，华为最近推出的AI芯片，在三联虹普的控制系统中就有应用场景。“华为能够帮助我们快速实现数字化、智能化转型。同时，华为有很多优秀的供应商、系统集成商伙伴，扩大了我们的朋友圈，使得我们有机会在其中找到技术合作伙伴，帮助合成纤维行业解决数字化转型的问题。我们与华为云EI（企业智能）团队已经有了良好的合作。”张敏喆指出，在与系统集成商合作，进入细分领域的过程中，存在的问题是所有的生产工艺数据并不是为数据分析准备的，这需要合作双方快速高效的磨合。三联虹普要帮助华为进一步了解实体产业的思维方式；而其自身则要从数据的角度，改变提出需求的方式，调整控制系统采集数据的方式，尽量匹配数据分析的逻辑。这是一个互相理解和跨界协作的过程，双方在合作中已逐步形成了有效的沟通方式，让双方信心倍增。“由于我们是流程型制造，生产线全部自动化，所以生产出的数据本身质量比较高，能够真正按照我们期望的方向去挖掘价值，提升产能。我们国家每年生产约25亿锭合成纤维，它的体量非常大，过去讲究的是稳定不变，以不变应万变。但是随着数据的介入，我们可以根据精准的数据，在大规模的生产中识别各种各样的状况，进而调整生产。这种柔性是人力所不及的，而这恰恰是AI能力的体现。”工业生产中的数据采集，维度和频度很重要。作为对比，人力采集能做到分钟级就已经很不错，但机器采集的频度可以达到秒级、毫秒级。张敏喆说：“这就是除了维度以外，频率的爆炸，它带来的是实时、更精准、更柔性的控制。这也是我们希望跟华为合作达到的目标，并希望将我们合作的成果在行业推广。”智能制造将加速升级合成纤维行业从建国以来就开始发展，现在已是第三代了，从前有很多精英投身于纺织行业。这个行业解决了民生的需求，基础深厚，一直蓬勃发展，产能从2000年的500万吨，发展到现在的4000万吨。“在新时代，信息化和智能化将帮助我们沉淀先辈的经验，带给行业发展巨大的机会，对我们走向未来有非常重要的促进作用。”过去在统一的标准体系下，以不变应万变的情况下，合成纤维行业已经发展到极致了。面向未来，需求只会更细分更复杂。如何面对这样的变化？个性化、小批次生产就是产业的协同方式，智能化和数字化也带来了帮助，使得生产更加柔性，可以分门别类针对各种情况制定生产方案。“应对未来更为纷繁复杂、更加丰富的下游产业需求的时候，我们需要做好准备，利用好AI等技术手段，提供重要的支撑。” | Three UK: From building capacity to sci-fi |
| 智能联接：融合5G、人工智能和物联网 | Intelligent connectivity: The fusion of 5G, AI, and IoT |
| 三联虹普是一家专注于合成纤维及其原料生产技术及装备领域的高新技术企业，致力于整合行业优势，搭建“互联网+”信息服务平台，建立行业大数据体系，实现金融、技术、信息的三联融合。三联虹普董事、战略投资部总经理张敏喆表示，AI技术带来的生产柔性，远超人力，将帮助智能制造行业加速升级。传统制造业的新机遇合成纤维制造行业对多数人是陌生的，但纺织行业大家就很熟悉。从前，纺织行业是关系国计民生的基础行业，放眼全球，也是这样的情况。纺织业其实也就是合成纤维制造业。我们的生活中充满大量的合成纤维，比如80%的食用纤维是合成纤维；还有我们身上穿的棉麻丝毛制品，天然的纤维含量很低。为什么会出现这个出乎意料的情况呢？张敏喆谈道：“这是因为天然纤维受耕地面积的影响，产量不高，而且生产方式是高污染的，合成纤维恰恰在这两个方面有优势，这使得合成纤维的需求变大。”合成纤维是美国杜邦发明的，它的产业链从美国拓展到欧洲，再到日本，再到中国台湾。中国大陆大规模进入合成纤维行业前，台湾是该产业全球流转的前一站，上下游的配套非常完善。“举一个例子，韩国东大门很多人都知道，东大门如果想用新材料做一件衣服，使用美国或日本的供应链，至少需要两周的时间才能打板，而台湾只需要两天。”台湾有很强的订单承接能力，这就是生产的柔性。这个行业如果叫武林世界，台湾就是武林至尊，因为能配套的都配套了，能完善的都完善了，供应链响应效率很高，产品质量也很高。跟传统纺织业不同，合成纤维行业是类似石油化工的连续性的资本密集型产业。目前，我国合成纤维产量占全球的50%。张敏喆说：“因为我国有大量的民生需求，所以形成了最大最高效最先进的产能。产能的后发优势，极大弥补了供应链协同的缺失，也形成了未来两大发展方向。第一是产业链协同，协同后将轻易战胜国际上的竞争对手。第二，合成纤维行业会有健康持久的发展，具备世界级的供需两侧的竞争力，会为合成纤维行业的集成解决方案提供发展机会。我们拥有核心工艺技术，水平和起点都很高，能够给行业提供有价值的生产线，能够让行业的客户在生产过程中产生更高效益。”智能制造释放生产柔性潜能工业互联网的门槛比较高，需要参与者了解行业的工艺原理，业务开展的规则等。张敏喆用一句话概括：“在工业领域，比正确解决需求更难的，是提出正确的需求。”如果提出的需求不对，所有的事情都事倍功半。“这可能也是华为进入工业领域时会产生的困惑，因为客户提出的需求是随机的，顺序是打乱的，难度也没有区分，而且客户对数据不了解，他不知道你能帮助他做什么，他也不知道他需要提供什么。这个过程产生了非常大的资源浪费。”如何快速理解某个细分领域的业务开展规则和技术诀窍的逻辑？张敏喆说：“我认为，与工程技术服务公司合作是理想的选择，三联虹普就是这样的公司。我们是合成纤维行业技术的所有者和产线的使能者，服务于行业各个层级的客户，具备真正的服务能力，可以帮助华为应对不同的客户需求。这样一来，华为只需要做好平台，提供通用型的解决方案，不必直接扎根于企业，所以说跟三联虹普合作是很好的选择。”“我认同华为对数据的承诺，即上不碰应用、下不碰数据。工业领域跟消费领域不同。消费领域是用不断的产品更新，刺激消费者的眼球。工业领域就比较严肃，而且重视并保护各个渠道，也就是说客户不会轻易共享数据和信息。我们提供服务的前提是，必须确保所有渠道的安全，使客户能够有效生产，确保产业链上下游的信息安全。”华为有全栈全场景的AI解决方案，可以在硬件、软件上支持物联网、AI多个技术领域，是优秀的系统集成伙伴，张敏喆表示。比如，华为最近推出的AI芯片，在三联虹普的控制系统中就有应用场景。“华为能够帮助我们快速实现数字化、智能化转型。同时，华为有很多优秀的供应商、系统集成商伙伴，扩大了我们的朋友圈，使得我们有机会在其中找到技术合作伙伴，帮助合成纤维行业解决数字化转型的问题。我们与华为云EI（企业智能）团队已经有了良好的合作。”张敏喆指出，在与系统集成商合作，进入细分领域的过程中，存在的问题是所有的生产工艺数据并不是为数据分析准备的，这需要合作双方快速高效的磨合。三联虹普要帮助华为进一步了解实体产业的思维方式；而其自身则要从数据的角度，改变提出需求的方式，调整控制系统采集数据的方式，尽量匹配数据分析的逻辑。这是一个互相理解和跨界协作的过程，双方在合作中已逐步形成了有效的沟通方式，让双方信心倍增。“由于我们是流程型制造，生产线全部自动化，所以生产出的数据本身质量比较高，能够真正按照我们期望的方向去挖掘价值，提升产能。我们国家每年生产约25亿锭合成纤维，它的体量非常大，过去讲究的是稳定不变，以不变应万变。但是随着数据的介入，我们可以根据精准的数据，在大规模的生产中识别各种各样的状况，进而调整生产。这种柔性是人力所不及的，而这恰恰是AI能力的体现。”工业生产中的数据采集，维度和频度很重要。作为对比，人力采集能做到分钟级就已经很不错，但机器采集的频度可以达到秒级、毫秒级。张敏喆说：“这就是除了维度以外，频率的爆炸，它带来的是实时、更精准、更柔性的控制。这也是我们希望跟华为合作达到的目标，并希望将我们合作的成果在行业推广。”智能制造将加速升级合成纤维行业从建国以来就开始发展，现在已是第三代了，从前有很多精英投身于纺织行业。这个行业解决了民生的需求，基础深厚，一直蓬勃发展，产能从2000年的500万吨，发展到现在的4000万吨。“在新时代，信息化和智能化将帮助我们沉淀先辈的经验，带给行业发展巨大的机会，对我们走向未来有非常重要的促进作用。”过去在统一的标准体系下，以不变应万变的情况下，合成纤维行业已经发展到极致了。面向未来，需求只会更细分更复杂。如何面对这样的变化？个性化、小批次生产就是产业的协同方式，智能化和数字化也带来了帮助，使得生产更加柔性，可以分门别类针对各种情况制定生产方案。“应对未来更为纷繁复杂、更加丰富的下游产业需求的时候，我们需要做好准备，利用好AI等技术手段，提供重要的支撑。” | Why natural language processing is AI’s jewel in the crown |
| 大服务：个性、自动化全联接服务，全流程、可视化服务。航班全程智能化、可视化从航班全程智能化、可视化的角度，深圳机场与华为用了一年的时间，基于AI等技术，做了一些联合创新项目，以保障服务，提高机场处理容量。智慧机位分配智慧机位分配基于大数据和AI，实现机位资源调优，以提高廊桥机位的使用效率，降低旅客乘坐摆渡车的时间。相信几乎所有的旅客都被远机位摆渡车折腾得不舒服，智慧机位分配可以让靠桥位至少提高10%，意味着1000个航班中就有100个不再需要通过摆渡车，旅客的体验一定会更好。智慧助航灯智慧助航灯基于IoT和AI，实现单灯控制、路径规划和冲突检测，最终提高滑行速度，提升跑滑效率，减少降落后和起飞前的滑行时间。一个比较复杂的机场，从落地到靠桥，接近20分钟，甚至有可能会更长。如果能够有20%的提升，相当于每一个航班能省下3到4分钟，每天1000个航班就能省下3000-4000分钟，不仅节省了时间，对节能环保也有非常大的帮助。地勤可视化地勤可视化基于视频和AI，保障节点自动采集，资源智能分配，对机坪实行全面计算机视觉分析，对作业规范进行监管。以前的监管靠人，仅仅依靠人的话一定不会很安全，所以深圳机场决定通过视频分析提供监管。如何让旅客畅行机场除了航班的智能化和可视化，深圳机场在旅客出行上也在进行联合创新。打造未来机场，就要改变现在出行的模式，包括提供自助值机、自助托运、分级安检、智慧航显、刷脸登机、催促登机及VIP服务等，以提升通行效率，改善出行体验。这背后需要实现信息自动获取，基于视频AI实现人脸识别、轨迹分析和排队检测，以及旅客与机场、机场与航司的全数字联接。安检环节一直让深圳机场比较纠结，绝大部分旅客是安全可靠的，只有少数乘客可能需要机场的安全手段来管控。因此，深圳机场与民航总局以及官方机构规则的制定者，共同讨论是否有可能让旅客更顺畅地实施安检。目前，深圳机场已实现差异化分类安检的试点，现阶段还处在积累经验的过程中。此外，深圳机场也希望通过大数据分析，对所有进出深圳机场的旅客提供一张脸服务，全程刷脸出行，不需要再出示证件，提高便捷性，减少排队时间。所有的创新都需要整体的统筹规划，深圳机场携手华为等生态合作伙伴，统筹推进“未来机场”规划和建设。双方花了一年半时间全面梳理业务场景，统一基础架构，统一数据架构，统一数据平台。具体包括：实施顶层设计、架构设计、数据治理等全局的规划设计；面向未来联合创新，以管理不确定性、迭代和生态；进行企业标准和行业标准建设，打造未来机场样板点。2018年8月28日，首都航空紧急备降深圳机场，这是对深圳机场能力的信任。航空公司等行业企业及行业人士对深圳机场的能力都十分肯定，并认为深圳机场是一个值得信赖的机场。在创新技术的应用进一步深入的情况下，深圳机场能够做得更好。未来，深圳机场将继续与华为等生态合作伙伴共同努力，把服务细化到场景、把场景管理到平台、把平台开放给生态，紧紧围绕安全、效率、体验，打造全球领先的未来机场。（本文由陈颖莹整理编辑） | Three UK: From building capacity to sci-fi |
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| 工程全生命周期的健康监测是一个跨学科、多领域融合的行业，北京云庐科技有限公司致力于通过对全过程的监测数据分析，及时发现工程中可能出现的问题，避免或减少工程质量和安全事故的发生。本文揭示了云庐科技如何携手华为云，打造全球领先的结构健康监测物联网大数据平台，用新的技术守护工程安全。工程安全事关重大众所周知，安全事故事关重大，无论是智慧城市还是智慧交通，都离不开工程安全的保障，而工程事故有可能是发生在运维的阶段，也有可能是发生在施工期。目前，世界上多个国家把基础设施的灾变机理、预测方法等，纳入到未来的重要规划中。同时，基础设施灾害的发生，往往既有自然因素的影响，也有人为因素的影响。天灾可以通过对环境的预测，如气象、水文、地质灾害来预报，人祸可以通过法规、设计和在线监测系统来避免。云庐科技希望打造贯穿于工程全生命周期的健康监测系统，通过对施工过程的监测数据分析，及时发现工程中可能出现的问题，避免或减少工程质量和安全事故的发生。通过对运维阶段的监测数据分析，可以有效掌控运维期间结构的使用情况和发展趋势，为养护决策部门提供数据的决策支撑。而对施工期的监测和运维期检测数据的分析，又可以为设计阶段提供很好的借鉴作用。顾名思义，结构健康监测和医学上的健康监测有点接近，都是通过采集数据进行分析，最后给出诊断和治疗的结论。结构健康监测已经发展了20多年，目前大部分应用还处于利用传统的传感器，收集、采集数据的水平，无法对数据进行正确有效的分析。这个行业是一个跨学科、多领域融合的行业。首先，我们需要有传感器、网络、云平台以及系统集成等技术支持，也需要计算力学，以及建筑、桥梁、水利等专业技术的支撑配合。另外，我们还需要对数据建模，进行大数据分析，以及基于人工智能的数据挖掘。同时，我们要得出有效的结构损伤识别情况、结构刚度矩阵修正与重分析，还要进行结构的寿命预测等。云庐安全监测平台守护安全云庐科技结合华为云EI开发的系统，可以通过分析和识别，及时发现安全隐患，在结构可能发生危险的萌芽状态提前预警，为施工和运维部门提供数据与信息的支撑。我们大概采用了华为云50余项平台开发模块，所有的服务都是基于华为云服务运行。我们使用了包括数据存储服务在内的中间件，以及ModelArts的机器学习、深度学习、图象识别等各种平台。具体来讲，云庐科技基于华为云EI开发了五大应用场景。场景一：数据采集场景一是数据采集，例如可以采用一个光纤传感器，将数据传输到采集设备，再接到现场主机，传到云上，整个部署非常麻烦而且成本高昂。随着万物互联趋势的不断加深，我们采用华为的IoT模块可以使其接入更加便捷。我们还采用华为的边缘计算模块，使数据得到及时处理。而且，我们通过华为的边缘端还可以接入多种传感器的数据，一机多用。随着边、端和云的协同，整个设备的成本下降70%以上，系统响应速度提高了2倍。我们通过华为的边缘计算模块，可以使无效的数据量传输减少三分之二，使有效的数据量传输提高50%以上。场景二：确保数据的一致性场景二是确保数据的一致性。数据采集的整个过程中，参与的部门众多，人员复杂，工程生命周期长，而且面临频繁的各种变更，怎么保证数据信息和实物信息的一致性，是大家面对的共同挑战。我们基于华为区块链平台，将图纸、合同等通过区块链统一分发，使从业主、规划、设计、施工到运维等各环节的数据和内容保持统一。场景三：结构健康预测场景三是结构健康预测，这其中，我们最想利用的是及时得到建筑物的信息，如果某个建筑物有坏点，我们希望及时更换，以避免事故的发生。所以，我们需要对建筑物的寿命和健康状况进行有效预测，正如人不能两次踏入同一条河流，建筑物的承载力也是随着时间的变化而变化的。基于实测的环境荷载，如风、温度等，结合结构真实的响应情况，进行刚度矩阵的修正。这个过程可以以系统的总体矩阵为修正的对象，也可以以设计参数，如密度、弹性模量、约束条件等作为对象，得到建筑物当前承载能力的真实状态。我们再通过能预测得到的，如风速、风压、温度等因素，就可以对建筑物的结构响应进行真正意义上的预测。我们在华为云机器学习工程师的帮助下，可实现预测准确度接近90%。场景四：施工规范自动监测场景四是施工规范自动监测。随着建筑工业化的发展，现在有很多新型建筑形式产生，比如我们称为住宅产业化的结构。它是一种装配式的，不在现场进行浇筑，把构件运到现场进行现场拼装。住宅产业化是现在比较成熟的产业，已经在很多发达国家进行了应用。我国已明确提出到2020年，装配建筑占新建建筑的比例要达到20%以上，2025年要达到50%以上。这个行业会有突飞猛进的发展，蕴藏着巨大的市场商机，也肯定会有一些急需解决的技术难题。比如，怎么保证上下楼板在贯通的过程中得到强度的保证，这就要求所有的灌浆孔都要灌满，以前对现场的照片要人来识别，效率非常低，我们基于华为云ModelArts的深度学习图象识别模块，可以对灌浆孔的图片进行有效的识别，判断出哪些是灌满的、哪些是未灌满的、哪些是穿线管道。通常，上传一百张现场图片就可以进行有效的识别，有效识别率接近80%，这种工作可以使检查部门的效率提升50%以上，同时使施工的差错率降低30%。场景五：结构损伤识别场景五是结构损伤识别。以一个体育场馆的建筑为例，随着时间的发展，它会受到疲劳、腐蚀以及老化的影响，这个建筑不可避免地会产生一些损伤点。我们怎么找到这些损伤的部位，并且定义出损伤的情况，是比较重要的任务。另外，在建筑物上布设传感器，只是布设了一部分。这是因为传感器布设不能影响结构物原有的结构性能，而且出于经济的考虑不可能布设得特别多。所以，我们需要布置尽可能少的传感器，又要尽可能得到真实的建筑物性能情况，这要求我们对数据进行力学反演和损伤识别。以前的应用大部分都是针对几根杆件或者几块板识别，通过华为云ModelArts，我们现在可以识别相对复杂的损伤。基于华为云的EI平台，我们可以使力学仿真效率提升100倍，真正实现从数据到本质、从局部到整体、从监测到预测的整个过程的识别。在未来，我们希望拓展低能耗、低成本的物联网应用，以提升运维管理的效率和降低成本；我们希望开发合理的结构健康监测平台，将安全隐患消灭于初期，为智慧城市和智慧交通的发展添砖加瓦；我们希望打造工程健康监测领域的大数据平台，促进整个产业链的共同发展。概括而言，云庐科技希望携手华为云EI共同守护美好安全的生活。 | Digicom: Building smart cities with smart connections |
| 华为2018年全球销售收入为7,212亿元人民币，同比增长19.5%，在2018全球财富500强排名第72位，目前在全球约有18.8万名员工，900多个分支机构以及高达百万级的合作伙伴，业务遍及全球170多个国家和地区。 | In 2018, Huawei ranked No.72 in the Fortune Global 500 with its global sales revenue reaching USD 105.2 billion (CNY 721.20 billion), a year-on-year increase of 19.5 percent. Currently, Huawei has about 188,000 employees, millions of partners, and operates over 900 branch offices in more than 170 countries and regions around the world. |
| 规模如此庞大的“大象”，想要灵活地“跳舞”绝非易事。 | It is difficult for a large ‘elephant’ to ‘dance’ flexibly. |
| 华为的数字化转型，是要解决企业的发展问题，解决企业的高效运作问题，目前已经在研发、销售、交付、物流等九大核心业务领域的数字化转型上取得了一些成果，希望这些经验总结能为包括华为客户和合作伙伴在内的其他企业照亮数字化之路。 | Huawei’s digital transformation equips enterprises with efficient operations for better development. Currently, Huawei has achieved digital transformation in nine core business domains, including R&D, sales, delivery, and logistics — and we hope our experience can light the digital paths for other enterprises, including partners and customers. |
| 依托华为云打造“研发云”，将研发涉及的环节进行了服务化解耦，为研发提供仿真云、持续集成云、设计云、桌面云、杀毒云、测试云、分析云七种服务。 | Hosted on the Huawei Cloud, the company’s current R&D Cloud decouples engineering development phases based on services. The emulation cloud, continuous integration cloud, design cloud, desktop cloud, antivirus cloud, test cloud, and analysis cloud are provided for R&D personnel. |
| 通过将团队协作空间、项目管理服务、知识平台和专家资源平台集于一体的大平台能力，支撑销售。华为面向销售项目团队的不同角色，构建不同的用户体验。 | Huawei delivers different user experiences based on specific roles within a sales team with the construction of a large support platform that integrates collaborative spaces, project management services, knowledge platforms, and expert resource platforms. |
| 全球制造运营与指挥中心 | Global Manufacturing Operations and Command Centers |
| 集成服务交付 实时可视 | Real-time and Visualized Integrated Service Delivery |
| 通过将资源管理、外包管理、站点验收、收货、技术支持、人员管理都集成在一个作战平台上，为交付人员构建了一个一站式的服务交付平台，实现一线交付业务在线、实时、可视、高效。 | By integrating outsourced management, site acceptance, receiving, technical support, resource and personnel management into one operations platform, Huawei has built a one-stop delivery platform plus a series of IT equipment under a service-oriented architecture for delivery personnel. This helps apply online, real-time, visualized, and efficient frontline service delivery. |
| 通过交易核算自动化、ERP优化、数据调度优化、数据质量监控以及提升数据分析平台的性能，华为实现了全球结账监控，实现过程可跟踪、可管理，提高了资金支付的安全和效率。 | Huawei can now monitor global closings, including the ability to track and manage complex processes by adopting transaction accounting automation, ERP optimization, data scheduling optimization, which has improved the security and efficiency of the accounts payable department. |
| 华为最重要的一块业务就是研发，近十年投入研发费用超过4850亿元人民币，目前华为在全球有14个研发中心，36个联合创新中心，1500个实验室，8万多名研发人员。 | R&D is a critical business activity for Huawei. In the past decade, the company has invested more than CNY 485 billion in R&D alone. At present, Huawei has 14 R&D centers, 36 joint innovation centers, 1,500 labs, and more than 80,000 R&D personnel around the world. |
| 相比于其他业务，销售具有较大的不确定性，数字化挑战很大。过去，一线的指挥官即使发现增长不足，也不能迅速知道到底是线索出了问题，还是项目成功率出了问题，或是某个大客户项目出了问题。通过将团队协作空间、项目管理服务、知识平台和专家资源平台集于一体的大平台能力，支撑销售。华为面向销售项目团队的不同角色，构建不同的用户体验。例如，通过指挥系统为管理者提供战场可视的数字化指挥体验，通过作战系统为项目经理以及项目铁三角提供销售项目运作线下到线上的体验，通过自动化系统为合同商务提供线上作业自动化和智能体验，提升团队协同水平和业务运作效率，改善一线用户体验。 | Compared with other services, sales often experience greater uncertainty and more digital challenges. In the past, after detecting slow business growth, frontline directors could not quickly determine whether the lack of growth was caused by errors with lead generation, failure to fulfill project success goals, or problems with key account projects.Huawei now delivers different user experiences based on specific roles within a sales team with the construction of a large support platform that integrates collaborative spaces, project management services, knowledge platforms, and expert resource platforms. For example, the command system provides a visualized digital experience for managers; the operations system allows project managers to operate sales projects both online and offline; and the automation system provides online automatic and intelligent operation experiences for contract and commercial personnel — the results are improved team collaboration, greater business operations efficiency, and a higher quality frontline user experience. |
| 集成服务交付 实时可视 | Real-time and Visualized Integrated Service Delivery |
| 现在通过将资源管理、外包管理、站点验收、收货、技术支持、人员管理都集成在一个作战平台上，通过服务化的架构，华为为交付人员构建了一个一站式的服务交付平台和一系列IT装备，实现一线交付业务在线、实时、可视、高效。华为在西安有一个交付指挥中心，在大屏运营中心可以看到全球交付的项目，甚至每一个站点的执行情况，大幅度提高了整个服务交付的效率。华为每年交付百万站点，每个站点数百个检查项，如果全部使用人工审核将耗时耗力。针对站点交付质量检查，华为开始从人工迈向机器智能审核。按照场景实现机器自动审核，天线/接地线/BBU/等条目质检，机器实时检查的时间小于1分钟。目前，机器智能审核已经在全球各地广泛推广验证。交付的数字化也离不开客户和伙伴的支持。例如，在印尼，华为每天平均交付300个站点，覆盖1000多个岛屿，同时有1100多支施工队伍，每天物流运输使用车船300多次。基于数字化作业平台，客户、华为、分包商三方计划在线协同，所有货物和队伍位置状态信息实时可视，人、货同步到达站点，质量远程验收。利用数字化手段，行为即记录，记录即数据，交付进度提高30%单站成本下降13%。 | By integrating outsourced management, site acceptance, receiving, technical support, resource and personnel management into one operations platform, Huawei has built a one-stop delivery platform plus a series of IT equipment under a service-oriented architecture for delivery personnel. This helps apply online, real-time, visualized, and efficient frontline service delivery. For example, Huawei’s Xi’an delivery command center uses large screens to greatly improve service delivery efficiency by displaying the status of global delivery project execution at each site.Huawei delivers to millions of sites each year and each site has hundreds of check items. Manual review would be time- and labor-consuming, so Huawei turns to intelligent machines that take less than one minute to inspect items like antennas, ground cables, and Baseband Units (BBU) — and at present, these scenario-specific intelligent machine audits have been verified and widely promoted worldwide.Digital delivery cannot be achieved without partner and customer support. For example, in Indonesia, Huawei delivers 300 sites on average by more than 1100 construction teams using more than 300 shipment vehicles every day, covering more than 1000 islands. |
| 全球制造运营与指挥中心 | Global Manufacturing Operations and Command Centers |
| 支付是财务的重要一环，华为有海量的业务和数据，涉及70多个系统，支付次数和金额更是大得惊人。过去，整个支付流程采用6层管理机制，包括发票接收扫描、制单会计入账、复核会计入账、支付会计入账、审核付款、日结对账，需要层层过滤校验，都是采用人工比对，效率较低，差错也在所难免。借助高性能计算平台，华为实现了从“手动”支付到“自动”支付的转变，提高了资金支付的安全和效率。“自动”支付支付差错率（金额）已经降低到万分之0.32；IT系统卷积计算和监控历史开票数据时间从2~3小时降低到5分钟。 | Payments are an important part of finance, and Huawei has a wide spectrum of businesses and a large amount of data in over 70 systems that require staggered payment times and different sums. In the past, the entire payment process employed a six-layer management mechanism — including invoice receipt and scanning, bookkeeping by the accountants responsible for preparing notes, bookkeeping by the review accountants, bookkeeping by the payment accountants, audits, payments, and daily reconciliations — that was processed by manual comparison, which caused low efficiency and frequent errors.Using a high-performance computing platform, Huawei has shifted from manual to automatic payment processing, and in so doing has improved the security and efficiency of the accounts payable department. Automatic payments have reduced the error rate to 0.0032 percent, shortened IT system convolutional calculation time, and reduced historical billing data monitoring time from nearly 3 hours to 5 minutes. |
| 在华为9大核心业务的数字化转型实践中，全方位采用了华为领先的ICT产品及解决方案和创新的数字平台，例如云数据中心、园区网络、网络安全、视频云平台、融合通信、边缘计算物联网（EC-IoT）、eLTE宽带无线接入等等。 | Huawei’s nine core business practices have been operationalized by deploying the company’s leading ICT products and solutions — including innovative digital platforms such as cloud data centers, campus networks, network security, video cloud platforms, converged communications, Edge Computing-Internet of Things (EC-IoT), and eLTE broadband wireless access platforms. |
| 提供0.5ms稳定低时延，及99.9999%高可用性的全闪存存储OceanStor Dorado V3 | as OceanStor Dorado V3 all-flash storage appliances with 0.5 ms latency and 99.9999 percent availability |
| 支持全可编程400G网络的CloudEngine数据中心交换机 | CloudEngine data center switch that supports fully programmable 400 Gbit/s networks |
| 无论是华为的核心业务转型，还是华为差异化的ICT产品与解决方案，都在逐步融合云计算和人工智能技术，以让业务和产品更智能。那么华为到底是如何应用这两大技术的呢？ | Both Huawei’s core business transformation and differentiated ICT products and solutions are gradually converging cloud computing and AI technologies to make businesses and products smarter. How does Huawei apply the two technologies? |
| 与其他全球大公司或者政府机构一样，华为也建设了一个私有云来部署关键业务和数据。经过20多年的建设，华为内部有ERP软件包和物理机。为了共享能力和提高IT资产使用效率，华为把这些非云的应用和IT基础设施变成云的架构。云化的同时，又不能影响公司的业务正常开展。因此，企业的云化会是一个逐步的过程，对于ERP，一定时期内不会动它，但会把它沉到“后台”去，作为应用主干使用。 | After more than 20 years of construction, Huawei has Enterprise Resource Planning (ERP) software packages and physical machines that share capabilities for the improvement of IT asset utilization — and has now moved those applications and IT infrastructures into the cloud to the benefit of company business. |
| 人工智能算法和算力近年来取得重大突破，例如AlphaGo Zero、TensorFlow以及华为企业智能服务（EI）等等企业应用的“拐点”已经到来。对企业而言，人工智能和大数据的前途在于应用和解决问题。目前，很多企业已经重视数据的收集和应用，但大量的数据分布在企业各种应用中，相互隔离，成为数据孤岛。有的企业虽然解决了数据互通、共享的问题，但对数据没有进行分层、分级，对所有数据使用同一种策略是不可行的。 | Enterprises are determined to use Big Data and AI to solve problems, and currently, many have prioritized data collection and applications. However, large amounts of data are located in silos formed by isolated enterprise applications. Although some enterprises have achieved data interworking and sharing, because their data has not been classified it is not feasible to apply a single policy that is applicable for all of it. |
| 华为制定了数据治理整体策略：数据驱动，规划统一大数据平台按照“4个平面”分层治理，构建企业数字化基础 | Huawei has formulated an overall data governance strategy: Driven by data, Huawei plans unified enterprise Big Data platforms that manage data on four planes to build a foundation for enterprise digitization. |
| 构建大数据分析平台，支持大规模非结构化和半结构化数据处理 | Build Big Data analytics platforms to support large-scale unstructured and semi-structured data processing. |
| 海量的结构化与非结构混合数据获取和高并发查询及时响应。 | Respond to large-scale structured and unstructured hybrid data acquisitions and high-concurrent queries in a timely manner. |
| 华为还将打造AI-Inside的全栈产品与解决方案 | Huawei will build ‘AI-Inside’ full-stack products and solutions |
| 从云、管、端三个层面提升产品和解决方案的竞争力。华为的立体AI架构，包含从芯片和算法、产品、网络到云服务，再到运营运维的全栈AI部署和应用。 | On top of this, Huawei will build ‘AI-Inside’ full-stack products and solutions to improve competitiveness for cloud, pipe, and device platforms. Huawei’s three-dimensional AI architecture includes full-stack AI deployment and applications that cover chips, algorithms, products, networks, cloud services, and O&M. |
| 只有积极拥抱数字化转型才能更好地生存下来。根据IDC对全球Top 2000的企业调查显示，2017年全球有67%的CEO将数字化转型作为核心战略。截止到2018年7月，全球财富500强中211家领先企业选择华为作为数字化转型伙伴，其中前100强为48家，期待未来有更多的企业能够在迈向数字化转型和智能世界之路上选择华为。 | Enterprises must actively embrace digital transformation to survive and thrive. According to IDC’s survey on the global top 2,000 enterprises, 67 percent of CEOs worldwide made digital transformation a core strategy in 2017. As of July 2018, 211 enterprises in the Fortune Global 500 (with 48 in the top 100) have chosen Huawei to be their digital transformation partner. We expect that more enterprises will collaborate with Huawei on the road to digital transformation and build a smarter world in the future. |
| 2017年全球有67%的CEO将数字化转型作为核心战略 | 67 percent of CEOs worldwide made digital transformation a core strategy in 2017 |
| 近年来，IT正逐步从支撑系统向生产系统升级，IT部门将承担更多责任，他们需要深入了解业务需求和先进理念，为业务创造更多价值。在汽车开发领域，工程师们正在通过全球化研发、提高CAE仿真比例和仿真精度等手段，缩短研发周期、加快新车上市、增加车型规模。 | In recent years, IT systems are gradually upgrading from support systems to production systems. IT departments will assume more responsibilities. They need to gain deep insights into business requirements and advanced concepts to create more value for businesses. In the automobile development field, engineers are shortening the R&D cycle, speeding up the launch of new vehicles, and enriching vehicle models through global R&D, more CAE (Computer-Aided Engineering) simulations, and higher simulation precision. |
| 这些先进的汽车技术都离不开使用CAE软件进行流体力学、碰撞、动力总成等仿真和测试，以及高性能计算（HPC）集群在幕后日以继夜的运算，以让工程师更快地获得仿真结果，为高品质的汽车保驾护航。这也使得支撑汽车仿真的HPC面临着多重挑战。 | Behind the leading automobile technologies is the CAE software that simulates and tests fluid mechanics, collision, and power assembly, and High-Performance Computing (HPC) clusters that run day and night. In this way, engineers can obtain simulation results more quickly, ensure high-quality vehicles, and make things possible. This poses multiple challenges for HPC. |
| 首先是能耗，数百台以上的服务器规模部署，每年电费成本昂贵，能耗成本在运营成本中占比很大，对服务器平台的功耗提出了很高的要求，节能成为客户关注的重点之一。其次是稳定性，停机导致性能下降或者业务暂停，会引发直接和潜在的收入损失，因此服务器的稳定性尤为重要，确保业务连续可靠运行，规模部署的服务器需要把故障率降到最低，并且即使出现故障也能及时处理。部署速度也不容忽视，随着汽车开发业务的迅猛发展，每年均有大批服务器需求，为满足业务上线要求，对选型、测试、运维管理、采购预测、生产和发货提出了极大挑战。 | The first challenge is energy consumption. The deployment of hundreds of servers on a large scale increases electricity costs, and power consumption cost accounts for a large proportion of the operations cost. Therefore, low power consumption of the server platform and makes energy saving is one of the key requirement. The second challenge is stability. Outages can result in performance deterioration or service interruption, causing direct and potential revenue loss. Therefore, server stability is of paramount importance. The platform must ensure service continuity and reliability, minimize faults that occur on large-scale servers, and ensure timely troubleshooting. Another challenge that cannot be ignored is deployment speed. The rapid expansion of automobile development services increases demands for servers every year. To meet service rollout requirements, but also imposes great challenges to type selection, testing, O&M management, procurement forecasts, production, and delivery. |
| 致敬华为与宝马集团的初次合作 | Salute to Huawei’s First Collaboration with the BMW Group |
| 宝马集团IT部门向HPC厂商提出了相应的产品规格要求，华为进入了最后的名单。宝马集团要求所有入围供应商用实力证明自己是最佳的选择。考虑到项目的特殊性，对于HPC供应商，除了产品本身的特性满足要求，跨国的交付能力，对产品的持续投入和创新力，强大的技术支持以及对问题的快速响应能力也尤为关键。 | The BMW Group’s IT Department required for HPC vendors for product selection. Huawei entered the final list. The BMW Group required all vendors to prove their competencies. With this particular project, besides satisfying product features, HPC suppliers must also be capable of international delivery, continuous product investments and innovation, strong technical support, and quick response to problems. |
| 作为一家业务遍及170多个国家和地区的企业，华为坚持每年将10%以上的销售收入投入研发，以产品创新、系统架构创新和商业模式创新的理念构筑ICT解决方案，携手合作伙伴共同着眼于客户在数字化转型过程中所遇到的现实挑战，帮助他们解决问题、实现商业成功。最终华为被选为其在瑞典新数据中心的HPC基础设施供应商。 | As a company that operates in more than 170 countries and regions, Huawei invests more than 10 percent of its annual sales revenue in R&D, and builds ICT solutions by innovating products, system architectures, and business models. Huawei joins together with partners to address customers’ challenges in digital transformation, help customers solve problems, and achieve business success. |
| 虽然该项目部署的都是标准化的服务器，但是华为的产品还是有一些可圈可点之处。与汽车测试一样，华为每一台服务器都会经过上百个小时、上千次的测试（包括暴力插拔测试、EMC测试），千锤百炼之后，保证了产品的高质量和高可靠。此次华为提供的机架式服务器凭借高效设计，在确保卓越计算性能的同时，能提供灵活、大容量的本地存储扩展能力和节能特性。以节能为例，华为服务器采用全方位的节能设计，如矢量气流管理技术、双面蜂窝孔板技术、DEMT动态节能技术、动态功耗封顶技术等，大幅度降低了能耗。 | Although this project deployed only standard servers, Huawei products offer other additional highlights. Like car tests, Huawei performed thousands of tests (including brute force insertion and removal tests and EMC tests) on each server for hundreds of hours to ensure high product quality and reliability. With efficiency design, Huawei’s rack servers provide flexible and large-capacity local storage expansion capabilities, energy saving features and, at the same time, ensured excellent computing performance. Furthermore, Huawei servers were designed using comprehensive energy-saving technologies, such as vector airflow management technology, double-faced cellular board technology, Dynamic Energy Management Technology (DEMT), and dynamic power capping technology, greatly reducing power consumption. |
| 皮特奥（Pitea）——一个临近北极圈的瑞典北部小镇，距离瑞典首都斯德哥尔摩800公里的地方，新的HPC集群就坐落在这里。首先当地有稳定和丰富的电力资源，以及100%使用可再生能源（水利或风力发电），接近零的二氧化碳排放符合可持续发展的理念；其次由于临近北极，为数据中心提供了天然的冷却环境；另外，瑞典几乎无处不在的光纤为数据高速传输提供了基础；物理安全也纳入考量范围，瑞典很少发生地震等自然灾害，并且有200多年没有发生过战争；此外，几大美国互联网巨头都陆续在瑞典北部建立数据中心，使得该区域成为数据中心战略投资的新高地。 | Pitea — a small town of Sweden near the Arctic Circle, a place 800 kilometers away from Stockholm, offers stable and abundant power resources, and 100 percent of the energy is renewable (hydropower and wind power). Extremely low carbon dioxide emissions met the industry sustainability targets. As Pitea near the arctic circle, providing a natural cooling environment for the data center. In addition, almost ubiquitous optical fibers in Sweden provided the basis for high-speed data transmission. Pitea also had high physical security. Natural disasters such as earthquakes seldom occurred in Sweden, and no war had occurred in more than 200 years. In addition, several US Internet giants had set up data centers in northern Sweden, making the region a new highland for strategic data center investments. |
| Fortlax是当地一家提供安全数据中心及数据中心托管服务的供应商，Fortlax特意为HPC集群改建了新的机房，选址也绝非一般，那里曾经是高安全的钞票处理场地。 | Fortlax, a local vendor, to provide the secure data centers and deliver data center hosting services. Fortlax built a new equipment room specifically for HPC cluster. The site was unique — a former top secure cash handling facility. |
| 2016年项目进入交付期，华为调配了在德国和瑞典最专业的团队和最优质的资源，选择了最合适的渠道伙伴Consalco支持整个项目。华为还与Fortlax签署了服务协议，以保证宝马集团HPC集群得到更加专业、及时的服务， Fortlax的IT工程师都可以随时向华为全球服务中心寻求技术支持和备件等服务。 | The project delivery started from 2016. Huawei utilized the most professional teams and high-quality resources in Germany and Sweden, and invited the most suitable channel partner Consalco to support the entire project. Huawei also signed a service agreement with Fortlax so that Fortlax IT engineers could seek technical support and exchange the spare parts from Huawei’s Global Service Center anytime, providing professional and timely maintenance services for the BMW Group’s HPC cluster. |
| 华为项目组在整个交付过程中处处以客户为价值中心点及考虑问题的出发点，与宝马集团及合作伙伴Consalco、Fortlax提前做了充足的准备和充分的沟通，将初始配置、机柜尺寸、电缆、机房空间和地板等细节都考虑周全，将风险降到最低，并推动华为研发有效解决了批次性故障问题，使得故障率大幅降低。同时，为满足宝马集团在瑞典快速部署HPC的要求，减少运输费用和时间，华为合作伙伴Consalco在本地购买了机架，并完成了机架的系统预安装和一体化包装，整机柜发货、运输，现场部署时只需安装服务器，接通电源和网络，即可上线业务。 | During the delivery, Huawei’s project team focused on the customer and considered issues from the customer’s perspective. The team fully communicated with each other, with the BMW Group and partners (Consalco and Fortlax) and made full preparations in advance. The initial configuration, cabinet dimensions, cables, equipment room space, floor, and other details were taken into consideration to minimize risks. Huawei R&D personnel effectively resolved batch faults, which greatly reduced fault rates. In addition, to support fast HPC deployment in Sweden and reduce transportation costs and time, Consalco purchased local racks and completed system pre-installation and integrated packaging locally. The cabinets were shipped and transported as integrated racks. On-site deployment personnel only needed to install servers. Services could go online as soon as the power was supplied and network cables were connected. |
| 最终，华为联合合作伙伴高质量、快速地交付了宝马集团与华为在ICT基础设施领域的第一个合作项目，该项目也是在宝马集团瑞典HPC集群交付的第一批HPC。系统上线后，一直稳定运行，华为通过第一个项目的成功交付充分证明了自己的实力。 | Ultimately, Huawei collaborated with its partners to deliver the first BMW Group-Huawei project for ICT infrastructure, marking the successful delivery of the BMW Group’s first HPC server cluster in Sweden. After going online, the system has been running stably. Huawei has demonstrated its strength through successful first project delivery. |
| 预见未来100年 数字化首当其冲 | Digital Transformation Is Vital for Next 100 Years |
| 交通出行是智能世界的重要一环，作为全球领先的ICT解决方案供应商，华为致力于把数字世界带入每个人、每个家庭、每个组织，构建万物互联的智能世界，想要实现就需要大量的ICT创新技术，并以共生共荣的生态系统作为支撑。华为期待在云计算、车联网、无人驾驶等更多领域与汽车行业开展深入合作，通过数字化转型，为客户带来更多价值，开辟个人交通出行的新篇章。 | Urban mobility is indeed an important part of an intelligent world. As a global leading ICT solutions provider, Huawei is committed to bringing digital to every person, home, and organization for a fully connected, intelligent world. To achieve this, the company offers a large number of innovative ICT technologies and a mutually beneficial ecosystem. Huawei is looking forward to further collaborating with automobile industry in more areas such as cloud computing, the IoV, and unmanned driving as the best partner for digital transformation. We hope Huawei products and solutions will bring more value to our customers by the digital transformation and open the new chapter of personal mobility. |
| 如何将数字世界带入北大西洋佛得角火山群岛 | Bringing the Digital World to Cape Verde Archipelago, North Atlantic |
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| 在世界地图的最西边，在非洲大陆边缘和地图边框之间的大西洋上，有一个小点，那是一个叫佛得角（葡萄牙語：República de Cabo Verde）的地方，佛得角属火山群岛，横跨大西洋中的10座火山岛屿，海岸线长965公里。佛得角特殊的地理位置使得其工业和农业基础薄弱，但服务业异常发达，在GDP中占比超过70%，对信息化技术发展需求迫切。因此佛得角政府把信息化建设作为国家战略，致力于通过信息通信与网络技术打造更加亲民的政府，创造更多商业机会，提高佛得角竞争力，发展开放型经济，推动经济发展，并为减少贫困人口创造必要条件。 | At the westernmost edge of the world map, there is a small dot — Cape Verde (Portuguese: República de Cabo Verde) in the Atlantic between the edge of the African continent and the map frame. Cape Verde, a volcano archipelago located in the mid-Atlantic Ocean, is composed of 10 volcanic islands and has a coastline of 965 kilometers. Cape Verde suffers from poor industry and agriculture due to its unique geographical location; however, the service industry is extremely robust, accounting for more than 70 percent of the country’s GDP and proposing strong demands for information technology development. With informatization as a national strategy, the Cape Verde government is committed to building a more people-oriented government, creating more business opportunities to improve the competitiveness of Cape Verde, developing an open economy to promote economic development, and alleviating poverty through information communication and network technologies. |
| 近年来，很多西非国家为发展信息化技术都新建了国家级数据中心，但由于缺乏应用软件开发能力，本国没有对应的ICT人才和生态，导致很多数据中心都处于空载状态。佛得角政府希望改变这种现状，依托电子政务项目的实施，帮助佛得角建立起覆盖全国的电子政务办公网络以及国家数据中心，大幅度提高政府办公效率，促进教育医疗等资源共享，提升国家信息化水平，将佛得角打造成西非沿海国家的信息枢纽，成为西非的灯塔。 | In recent years, many West African countries have built national data centers for informatization technology advances. However, due to lack of application software development capabilities, ICT talent, and an ICT ecosystem, many data centers have no load. The government of Cape Verde expects to change this situation. Through the implementation of the eGovernment project, the government of Cape Verde is attempting to build a nationwide eGovernment office network and a national data center. The purpose is to greatly improve government office efficiency, promote the sharing of education, medical care, and other types of resources, improve Cape Verde’s informatization level, and build the country into an information hub for West Africa’s coastal countries, as well as a lighthouse in West Africa. |
| 佛得角电子政务项目由信息社会执行总署（NOSi）发起和实施，并负责电子政务系统建成后的业务开发和运维。NOSi拥有19年的电子政务运营和开发经验，具有较强的电子政务应用软件开发能力和ICT技术实力。电子政务项目一期于2010年启动、2014年交付，主要是建设国家级数据中心并升级政府通信网络，项目交付后，初步完成了国家政务网系统平台及岛屿互联网络平台的建设，基于此，NOSi启动了政务信息化系统的部署。 | NOSi, Cape Verde’s Operational Information Society Nucleus, initiated and implemented the eGovernment project and was responsible for service development and O&M after the eGovernment system was built. With 19 years of experience in eGovernment operations and development, NOSi has strong capabilities in eGovernment application software development and ICT technologies. The first phase of the eGovernment project was initiated in 2010 and delivered in 2014, which mainly included the construction of a national data center and an upgrade of the government communications network. This project phase completed the preliminary establishment of the national government network system platform and island interconnection network platform. Based on these achievements, NOSi initiated the deployment of the government informatization system. |
| 随着佛得角电子政务应用的逐步增多，以及面向第三方的租赁业务迅速增长，一期建设的容量只有200个虚拟机的国家数据中心，处于满负荷运行的状态，没有剩余空间满足新应用和新业务的上线；未接入网络地区的机构仍使用纸质办公，存档管理混乱，办公效率低下，给相关统计和管理工作带来较大困难；十座岛屿间教育和医疗资源不能有效共享，在偏远区域存在师资落后、硬件条件差、整体教育水平低、政府无法有效掌握人口健康和医疗信息等问题；由于岛间交通不便，各政府机构每年需要支出大量差旅费用，人均出差成本约为340美元/次，按照每月1000人出差，差旅费用就高达34万美元/月，沟通效率也很低。 | With the gradual emergence of new eGovernment applications in Cape Verde and the rapid growth of service leasing to third parties, the national data center, with only 200 Virtual Machines (VMs) built in the first phase, was fully loaded, leaving no available space for new applications or services. Organizations in areas that were not connected to the network were still using a paper-based working mode, leading to poor archival management, low work efficiency, and great difficulties in statistics collection and management. The education and medical care resources of the 10 islands could not be effectively shared. Remote areas suffered from sub-par teachers, poor hardware, and a low overall education level, and the government could not effectively obtain the population’s health and medical information in those areas. Due to difficult inter-island transportation, government agencies faced high travel expenses each year. The average travel cost per person was about USD 340 per trip. In this way, the travel expenses of 1,000 persons would reach USD 340,000 per month. An inefficient transportation network also hindered communication between government agencies. |
| 这些因素使得佛得角电子政务二期顺理成章地启动了。华为凭借着在一期与佛得角政府及NOSi的良好合作，云管端协同的一站式创新ICT基础架构平台，以及在政务云领域的众多成功实践，NOSi毫不犹豫地选择了华为。 | The preceding factors drove the initiation of the second phase of Cape Verde’s eGovernment project. Through smooth cooperation with the government of Cape Verde and NOSi, one-stop innovative ICT infrastructure platform enabling cloud-pipe-device synergy, and a large number of success stories in the eGovernment cloud field, Huawei was immediately selected by NOSi. |
| 在云数据中心扩容方面，在原来基础上，华为为客户新建了1000个虚拟机，将过去480核CPU、400TB存储容量升级到1656核CPU、1000TB存储容量。根据2011年~2015年国家数据中心虚拟机数量需求年均60%的增速，本次扩容预计能够满足未来5年业务发展的需求。此外，华为还为政府机构和国家信息化培训中心提供了1000套FusionCloud桌面云，重点解决了政务办公环境中信息难以全面保护、难以高效维护、资源使用不充分和网络隔离切换不便等问题。 | In terms of cloud data center capacity expansion, Huawei built 1,000 VMs for customers and upgraded the system from 480-core CPUs with 400 TB of storage capacity to 1,656-core CPUs with 1,000 TB of storage capacity. If the national data center’s demands for VMs continues to grow at the same annual rate (60 percent) as that from 2011 to 2015, the capacity expansion implemented this time could meet the business development requirements in the next five years. In addition, Huawei provided FusionCloud desktop cloud systems for government agencies and national informatization training centers, solving key government administration problems such as incomplete information protection, low-efficiency maintenance, insufficient resource usage, and difficult network isolation and switchover. |
| 基于“一云一湖一平台”架构的云数据中心，华为政务云解决方案为NOSi提供了共享的基础资源、开放的数据支撑平台、丰富的智慧政务应用、全面的政务信息化服务、立体的安全保障、高效的运维服务保障，打通部门之间的数据壁垒，打造基于云平台，拉通各部门的数据共享交换平台，为佛得角政府及企事业单位主动、高效的一站式办公模式提供ICT基础设施。 | Based on the ‘one cloud, one lake, and one platform’ architecture, the Huawei eGovernment Cloud solution provides the NOSi with shared basic resources, open data support platforms, rich smart government administration applications, comprehensive eGovernment services, strong security assurance, and efficient O&M service assurance. Those services helped remove data barriers between departments, build cloud platform-based and cross-department data sharing and exchange platforms, and deliver ICT infrastructure to enable the proactive and efficient one-stop work mode of government agencies and enterprises in Cape Verde. |
| 与非洲许多国家类似，佛得角医疗教育等公共资源分布不均衡，佛得角1/3的学校集中在首都普拉亚、港口城市明德卢以及圣卡塔琳娜三个城市， 58.6%的医院集中在圣地亚哥和圣安唐两个岛屿。佛得角电子政务网致力于通过同一张网络连接全国1142个机构，利用华为提供的530个路由器和669个交换机，拓展一期建设的网络，并实现对中小城镇学校、医疗机构和企事业单位的接入覆盖，为上层应用铺好数据传输管道。这些网络基础设施打破了因地理因素造成的分隔，让偏远区域的民众享受到网络及电子政务带来的益处，例如远程医疗应用系统能够让急诊病人及时获得首都更优质医疗团队的专业服务。 | Similar to many African countries, Cape Verde suffered from unevenly distributed public resources, with one third of the country’s schools in three cities (the capital Praia, the port city of Mindelo, and Santa Catarina) and 58.6 percent of the hospitals on two islands (Santiago and Santo Antão). The Cape Verde eGovernment network was dedicated to connecting 1,142 organizations across the country through the same network. It used 530 routers and 669 switches provided by Huawei to expand the network built in phase one and allowed access from schools, medical institutions, government agencies, and enterprises in small and medium-sized cities and towns, and built data transmission pipelines for upper-layer applications. The network infrastructure broke geographical separation and brought network and eGovernment benefits to people in remote areas. For example, the telemedicine application system enabled emergency patients to obtain better professional services from the capital’s medical teams in a timely manner. |
| 佛得角首都以外的学校普遍面临教师资源匮乏、教育水平较低的困难，迫切希望加入全国电子教育网络、及时分享其他学校的优质教育资源，以提升本地教育水平。另外，教师队伍中也存在相互之间课题探讨以及与海外其他同仁交流的诉求，但各火山岛之间交通费用极高，视频会议系统能够提供极大的便利。为此华为帮助佛得角几大岛屿的高中以及市级政府等机构部署了30套视频会议系统。 | Confronted with insufficient teachers and low education quality, schools outside the capital of Cape Verde were eager to access the national eEducation network and acquire quality education resources of other schools in time to improve the local education quality. Teachers also expected to exchange with each other in schools in and outside Cape Verde; however, the cost of traveling between volcanic islands was extremely high. In this case, videoconferencing systems could provide great convenience. Therefore, Huawei deployed 30 videoconferencing systems in high schools and municipal governments on Cape Verde islands. |
| 为帮助佛得角构建和信息与通信技术行业发展匹配的人才培养机制，培养足够数量的合格信息与通信技术人才，华为还提供了WebLab一体化ICT培训系统。通过在集装箱配备ICT通信设备、可编程启蒙机器人套件、电子维修工具以及家具设备，依托当前NOSi的国家数据中心，通过云化数据中心为其他岛上的学生提供ICT基础培训。一方面可为在校中学生和当地民众提供ICT培训教学，另一方面也可作为多功能教室提供其他技能培训和认证等服务。 | Huawei also provided WebLab, an integrated ICT training system, to help Cape Verde build a talent cultivation mechanism for educating sufficiently qualified ICT talent for its ICT industry development. ICT communications equipment, programmable enlightening robot suites, electronic maintenance tools, and furniture were deployed in containers based on NOSi’s current cloud national data center to provide basic ICT training for students on other islands. Those containers could not only provide ICT training for middle school students and local people, but also serve as multi-functional classrooms to deliver other skill training and certification services. |
| 以IGRP（Integrate Government Resource Planning）为例，该平台中预集成各种应用模块，开发者可以利用这些模块和组件快速搭建上层应用软件，提升政府公共部门效率，避免资源的重复投入，减少公共管理成本，获得最大化的投资收益，NOSi总裁称之为“e-Gov Software Maker”。 | Take the IGRP as an example. Developers can use a variety of pre-integrated application modules and components to quickly build upper-layer application software, improve the efficiency of the government’s public departments, avoid duplicate resource investment, minimize public management costs, and maximize Return On Investment (ROI). With these capabilities, the IGRP earned the title “eGov Software Maker” from NOSi’s President. |
| 再如医疗信息系统（SIS），它是一个连接模块，用来管理医院、监控人口状况以及提升相关机构职能，包括药品、临床器材和物料的管理，实验室诊断管理，出入院、预约、死亡信息等统计，预约管理（包括医生日程管理），通过互联网分析医院预约情况，给医院指定日程安排。 | Another example is the Medical Information System (SIS). It is a connection module used to manage hospitals, monitor the population status, and improve institutions’ functional capabilities. The SIS manages pharmaceuticals, clinical equipment, materials, laboratory diagnosis, and reservations (analyzing a hospital’s appointment information through the Internet and making schedules for doctors based on the results), and collects statistics on hospitalizations, appointments, and deaths. |
| NOSi总裁Antonio Joaquim Fernandes表示：“华为为佛得角国家数据中心、数据传输网络及电子政务建设提供了宝贵的支持，为政府部门和公共机构提供了数据、语音与视频会议服务，为NOSi构建电子政务平台提供了创新的数字化平台，我们将在此基础上建设商务中心、企业孵化中心和培训中心，将佛得角打造成非洲先进的信息服务平台。” | Antonio Joaquim Fernandes, NOSi’s President, said, “Huawei provides valuable support for the national data center, data transmission network, and eGovernment construction in Cape Verde. It provides data, voice, and videoconferencing services for government departments and public institutions and delivers an innovative digital platform to help NOSi build an eGovernment platform. Based on the digital platform, we will develop the business center, enterprise incubation center, and training center to build a leading information service platform in Africa for Cape Verde.” |
| 根据2017年国际电信联盟报告，佛得角的ICT发展指数IDI紧跟南非位列非洲第四，远远高于尼日利亚、安哥拉、冈比亚、莫桑比克等西非沿海国家。配合佛得角政府区域ICT枢纽战略，NOSi利用其ICT基础设施和能力已向西非周边国家输出电子政务应用及服务，并吸引了40多个国家的政府团组参观考察。 | According to the 2017 International Telecommunication Union (ITU) report, the ICT Development Index (IDI) of Cape Verde ranked No. 4 in Africa, far higher than that of coastal countries such as Nigeria, Angola, Gambia, and Mozambique. Under the regional ICT hub strategy of Cape Verde, NOSi has delivered eGovernment applications and services to neighboring countries in West Africa based on its ICT infrastructure and capabilities and attracted government delegations from more than 40 countries. |
| 当前，包括政府在内的每个组织都处在数字化转型的关键时期，华为期待把数字世界带入每个组织，构建万物互联的智能世界，而佛得角政务云的建设无疑是帮助佛得角政府、教育和医疗机构以及其他企业通往智能世界的必经之路，让佛得角成为北大西洋数字化转型的一颗明珠。 | Currently, every organization, including each government, is in a critical period of digital transformation. Huawei is looking forward to bringing digital to every organization for a fully connected, intelligent world. It is evident that the construction of Cape Verde’s eGovernment cloud is a necessary step for government, education, medical institutions, and enterprises in Cape Verde to enter a smart world. The eGovernment cloud also makes Cape Verde a pearl of digital transformation in the North Atlantic region. |
| 华为助艾古莱尼市成为南非智慧城市领跑者 | Huawei Helps The City of Ekurhuleni Grow into a South African Smart City Pioneer |
| 即使某些与基因相关的疾病已出现，基因测序也可以帮助找到对应突变的基因，进而准确地进行靶向治疗，这正是精准医疗的研究方向之一。蒋慧表示：“2011年，美国医学界首次提出了‘精准医疗’的概念。精准医疗的重点不在‘医疗’，而在‘精准’。通过基因测序技术预测未来可能会患有哪些疾病，从而更好地预防；一旦患上了某种疾病，可以进行早期诊断；诊断后用药的靶向性也更强，病人将得到最合适的治疗和药物的使用，实现最佳剂量和最小副作用，以及最精准的用药时间。疾病的护理和愈后效果也能得到准确的评估和指导。”2015年1月，当时的美国总统奥巴马在国情咨文中提出“精准医疗计划”后，一时间“精准医疗”成为全球热门话题，精准医疗建设以迅雷不及掩耳之势蔓延，中国也不例外。在2016年，中国把精准医疗列入“十三五”国家科技创新规划。这成为基因技术快速发展的契机，其重点在疾病队列研究、疾病的分子分型和分期、个体化治疗、大数据的收集和挖掘等方面。2017年10月，在第十二届国际基因组学大会（The 12th Annual Meeting of the International Conference on Genomics, ICG-12）上，华大智造发布了两款新的高通量测序仪MGISEQ-2000与MGISEQ-200，同时，华大基因发布基因组解码计划GDP（Genome Decode Program），并发布了百万中国人基因数据库（CMDB, Chinese Millionome Database）。蒋慧分享道：“有了这些测序‘神器’和科研成果的加持，新一代基因测序技术带来了成本上的革命，相信在不久的将来，平均一天就能完成24个肿瘤样本的快速检测。三年内，基因组测序将进入百元人民币时代，人人都有望拥有自己的全基因组数据。24小时精准医疗（All in one day）不再遥远——基因数据的获取、分析、解读在一天内完成。”成本大幅度降低后，普通人将能够享受到基因组测序的福祉。蒋慧介绍道：“中国的出生缺陷比例较高，在5.6%左右。为了减少和预防出生缺陷的发生，从怀孕前到生产后的整个过程，人们都可以进行不同的基因检测，这对减少和预防出生缺陷有重要的作用。高通量测序仪可以进行胚胎检测和妊娠后的新生儿检测。未来，无论是科学研究还是临床医学，甚至在农林牧副渔业等领域，基因组测序都有无限的想象空间，将推动医疗和科研领域高通量测序系统的全面普及。”AI加持随着人工智能与基因测序紧密结合，基因测序行业必然迎来更大的发展空间。事实上，已经有不少互联网巨头跨界进入基因市场。如Google首先联合DNAnexus打造巨大的开放式免费基因数据库。亚马逊数据云的公共信息平台上也有类似的数据库共享。未来关于基因数据的分析也会不断涌现出更多算法。根据预测，到2020年全球基因测序市场规模将达到138亿美元，年复合增长率为18.7%。华大智造不断探索基因测序技术与AI技术相结合的成功实践，实现了健康大数据的深度挖掘和应用。蒋慧举例说：“AI技术通过对脱敏基因数据进行深入分析，可以开发出更精确的疾病、表型预测模型，构建出更精细的人群遗传结构，并有望找到新的药物靶点。无创产前基因检测本来用于唐氏综合征等胎儿染色体疾病的筛查，并不是为癌症检测设计，但得益于华大的大数据与AI技术，通过对百万样本及肿瘤基因特征进行分析，使得识别无创基因检测数据中的肿瘤信号成为可能。基于无创产前基因检测数据被早期发现的孕期肿瘤案例已逾40例，几十个家庭因为疾病的早期发现而受益。”截至2017年底，华大基因生育产品临床检测累计服务近500万人，已完成超过280万例无创产前基因检测，检出率和特异性均大于99%，检出了3.8万余例染色体异常胎儿；超过153万名新生儿或孕妇接受了耳聋基因筛查的检测服务，帮助约8万携带者防聋控聋。除了在基因测序领域的应用，蒋慧指出AI技术在医疗行业的其他应用也潜力巨大。“我国人口占世界人口总数的22%，但医疗资源仅占世界的2%。据统计，我国医疗机构80%集中在城镇，农村和偏远地区。资源严重不足，大部分高新技术、设备和优秀医护人才都集中在大城市和大医院，不能满足所有群众基本的卫生服务需求，也导致了大医院内医疗资源紧张。医疗健康的需求端急剧上升和供给端的严重不足，驱使人工智能等技术与医疗健康行业的结合。”“在客观数据的收集和分析上，人工智能的速度和能力远超人类，特别是医学影像识别领域，因为医学影像数据相对标准化，非常便于机器识别和深度学习。智能辅助诊断系统可将医生的看片时间平均减少4.25个小时，准确度提高到90%以上。这样一来，不仅医生有更多时间提高业务水平，还能够把医生‘还给’患者，让医生有更多的时间为患者提供其它诊疗。此外，人工智能技术整合基因和影像等跨组学数据，能更全面地分析疾病在不同发展阶段的内在关联性。”5G、云计算带来更多可能2018年初，华大智造交付的远程超声诊断系统MGIUS-R3在深圳罗湖医院（集团）开始试用。这种远程超声诊断系统，扩展了超声设备的应用场景，在偏远或极端环境、社康中心等地方都能发挥重要作用，突破传统超声诊疗方式的局限，克服时空障碍，有助于改善医疗资源分布不均衡的现状，同时将基因数据与影像数据进行整合，使全民平等地享受优质的精准医疗服务。一直以来，远程超声检测、远程手术等远程实时操控类应用受制于带宽和时延的苛刻要求。例如，医生手部动作、图像传输、力量反馈必须达到高度同步，这在现有网络条件下难以实现。为了解决这一难题，华为Wireless X Labs与华大智造联手探索，使用4.5G/5G网络技术为远程超声机器人提供信号和数据的连接，帮助医生远程操控病人端的超声探头，进行诊断。4.5G/5G网络具备大带宽特性，能够为现场音视频和B超图像的实时传输提供数十兆的传输带宽。另一方面，4.5G/5G网络也拥有低时延特性，病人体表的力量反馈信号在短短几毫秒内就可以传递到医生的触觉设备。此外，利用4.5G/5G网络，超声影像还能传输到云端完成实时分析，多层次辅助医生诊断。蒋慧表示，“在4.5G/5G网络助力下的远程超声诊断系统，让高灵敏度力反馈系统得以应用，能在直径为850mm的空间内进行扫查，全面满足了心脏、颈部、胸部及腹部等全身应用的检测需求；高清的视频语音系统让专家和病人沟通畅通无阻；远程调节超声图像的参数，无时延，实现实时快速诊断，提高诊疗效率。”基因测序正在从个体走向大规模群体，从科研走向广泛的商用，伴随而来的计算分析模式也逐步从本地、离线，走向云端、在线，数据产生的量越来越大。蒋慧说，“基因测序的成本在降低，数据产出的速度越来越快，纯粹依靠我们自己的能力建设大型的数据中心，已经跟不上海量数据产出的速度。我们每个月产出300TB数据，到目前已经有22个PB的数据，怎么处理这种爆炸性的数据增长？”“同时，我们的国家基因库要与合作方实现数据共享，而云计算很好地满足了这些需求。通过长期的测试和使用华为OceanStor 9000云存储系统，我们的存储性能提高了25%-30%，给用户交付报告的时间从原来的15天缩短到7天。OceanStor 9000统一的文件系统和分层的存储管理，对华大的数据生命周期管理也有很大的帮助，可应对华大无创产前基因检测业务的需求。在信息技术与生物技术融合的年代，我们希望与华为联手，发掘更多让基因科技造福人类的机会。” | Genome sequencing is within reachThe human genome defines most characteristics of the human body, including the risk of suffering from certain diseases. Knowing our genomes’ features – or the flaws in our genes – can let us understand these traits and the odds of getting a given disease. Gene sequencing and data analysis can aid research on the relationship between diseases and specific gene forms and enable early detection and treatment.Even in cases where certain gene-related diseases have already developed, gene sequencing can help find the genes that correspond to mutations, which can aid targeted therapy. In fact, this is an area of research in precision medicine. “The concept of ‘precision medical treatment’ first appeared in the medical community in the US in 2011. The focus of precision medicine is not ‘medicine’ but ‘accuracy’,” says Jiang Hui. “Gene sequencing technology can be used to predict what diseases might develop in the future and thus better prevent them. We can carry out early diagnosis after a disease develops so diagnostic drugs can be used in a more targeted way.” As a result, she says, doctors can provide patients with the most appropriate treatment and drugs at optimal doses and times with minimal side effects, which in turn can help with post-treatment care.In January 2015, US President Barack Obama announced the Precision Medical Initiative in his State of the Union Address, increasing its profile and prompting projects to start popping up, including in China. In 2016, precision medicine was included in China’s 13th Five-Year Plan on Scientific and Technological Innovation, sparking the rapid development of gene technology in the country. The main areas of focus are cohort studies of diseases, molecular classification and staging of diseases, personalized treatments, and big data collection and mining. In October 2017, MGI Tech launched two new high-throughput genetic sequencers, MGISEQ-2000 and MGISEQ-200, at the 12th International Conference on Genomics (ICG-12) in Shenzhen. At the same time, BGI launched the Genome Decode Program (GDP) and the Chinese Millionome Database (CMDB).Jiang Hui says, “With these magical tools and the help of scientific research, next-gen gene sequencing technology has revolutionized cost. In the near future we’ll be able to complete rapid testing on 24 tumor samples per day. In three years, we’ll have 100 yuan (US$15.6) genome sequencing. Everyone will be able to have a record of their own genetic data in full. ‘All-in-one-day’ is within reach – acquisition, analysis, and interpretation of genetic data completed in one day.”After costs fall, ordinary people will be able to enjoy the benefits of genome sequencing. According to Jiang Hui, “China has a relatively high birth defect rate at around 5.6 percent. People can carry out various genetic tests before and during pregnancy and after birth to reduce and prevent birth defects. High-throughput sequencers can be used to perform embryo detection and post-pregnancy neonatal testing.” She believes that in the future, genome sequencing will offer infinite possibilities in both scientific research and clinical medicine, and even in fields such as agriculture, forestry, animal husbandry, and fishing. Harnessing AIThe closer integration of AI and gene sequencing will help develop the industry. Many Internet giants have been crossing sectors to enter the genetics market. Google, in collaboration with DNAnexus, has set up a vast open genome database that is free to access. And AWS’s Cloud Database also provides similar open databases on its public data platform. Going forward, we will see more algorithms that can be used in genomic data analysis.The global gene sequencing market is projected to reach US$13.8 billion by 2020 at a compound annual growth rate of 18.7 percent. MGI has been successfully exploring gene sequencing and AI, with achievements in big data deep mining and applications. Jiang points out that, “With AI, we can develop more accurate disease and phenotype prediction models through the in-depth analysis of desensitized gene data.” This, she says, will help us build a more detailed genetic structure of the population and hopefully find new drug targets. For example, non-invasive prenatal genetic testing was originally used for screening fetal chromosomal disorders such as Down’s syndrome. Although it was not designed for detecting cancer, MGI’s big data and AI makes it possible to identify tumor signals in non-invasive gene detection data by analyzing millions of samples and genetic characteristics of tumors. “There have been more than 40 cases of gestational cancers discovered early through non-invasive prenatal genetic testing data, and dozens of families have benefited from early detection of the disease,” Jiang says.By the end of 2017, BGI had run genetic tests for pregnancy on almost 5 million women, including more than 2.8 million non-invasive prenatal genetic tests, resulting in a detection and specificity rate of over 99 percent, including more than 38,000 fetuses with abnormal chromosomes. More than 1.53 million newborns and pregnant women have received genetic screening for deafness, which has prevented approximately 80,000 carriers from developing hearing losses.Jiang Hui also points out that, aside from gene sequencing, huge potential exists for AI in other applications in the healthcare industry. She says, “China has 22 percent of the world’s population but only 2 percent of the world’s healthcare resources – a serious shortage. Statistics show that 80 percent of healthcare institutions in China are located in urban areas, with just 20 percent in rural and remote areas.” Most of the new, high-tech equipment and best medical professionals are found in big cities and large hospitals. There isn’t enough equipment and staff to meet the healthcare needs of everyone, so resources are strained in large hospitals. The rapid rise in demand for healthcare and serious shortages on the supply side have driven the integration of technologies such as AI in the healthcare industry.“In terms of the collection and analysis of objective data, AI is much faster and more capable than humans,” says Jiang, which is especially the case in medical imaging. “Because medical image data is relatively standardized, this lends itself very well to machine recognition and deep learning. Intelligent auxiliary diagnosis systems can slash the time physicians spend looking at panels by an average of 4.25 hours and increase accuracy to over 90 percent,” Jiang says. This not only gives doctors more time to enhance service levels but also “returns” them to patients, giving doctors more time to spend on treating patients. In addition, AI can integrate different data, such as genetics and imaging, which, she says, allows doctors to more comprehensively analyze correlations in different stages of diseases.5G and cloud computingIn 2017, Shenzhen’s Luohu Hospital Group began trialing MGI’s remote ultrasound diagnostic system MGIUS-R3. The device expands the range of application scenarios for ultrasound equipment. It can play a crucial role in remote or extreme environments or in community centers. This device overcomes the limitations of traditional ultrasound diagnosis and treatment methods, and is a potential way to even out the distribution of medical resources. Integrating genetic data and imaging data will provide equal access to high-quality precision medical services for all.The bandwidth and latency demands of real-time remote-control applications, such as remote ultrasonic inspection and remote surgery, are extremely high. Surgeons’ hand movements, image transmission, and force feedback require high levels of synchronization. This is difficult to achieve using current networks. To solve this problem, Huawei Wireless X Labs and MGI have jointly looked at using 4.5G/5G networks to provide signal and data connections for remote ultrasound robots to help doctors remotely control patient-end ultrasound probes for diagnosis.4.5G/5G networks can provide several megabits of transmission bandwidth for the real-time transmission of audio and video and b-scan ultrasonography imaging. 4.5G/5G networks also support low latency, allowing force feedback signals of a patient’s body surface to be sent back to a physician’s haptic device in just a few milliseconds. 4.5G/5G networks can also send ultrasound images to the cloud to provide real-time analysis and multi-level assistance to doctors. According to Jiang Hui, “With a remote ultrasonic diagnosis system supported by 4.5G/5G networks, a high-sensitivity force feedback system and scan diameters of 850 mm are possible. This meets requirements for scanning the whole body including heart, neck, chest, and abdomen.” Moreover, the system’s HD video and voice system enables specialists to communicate with patients unimpeded. Ultrasound image parameters can be adjusted without any latency, supporting rapid, real-time diagnosis and making diagnosis and treatment more efficient.Gene sequencing is moving from individuals to larger populations and from research to broad commercial application. Moreover, computational analysis models are also starting to be used online in the cloud, whereas before they were restricted to local, offline use. “The cost of gene sequencing is falling, while data is being produced at a greater and greater speed. We can’t build a large-scale data center capable of keeping up with the massive amounts of data being produced on our own,” says Jiang Hui. “We produce 300 TB of data every month and we now have a total of 22 PB of data. How can we deal with this explosive data growth?”She also states that the hospital needs to enable data sharing of “our national gene bank with our partners.”“Cloud computing meets these needs well,” she says. “We’ve improved our storage performance by 25 to 30 percent through long-term testing and using the Huawei OceanStor 9000 cloud storage system. The time it takes to deliver reports to users has dropped from 15 to 7 days.” OceanStor 9000’s unified file system and hierarchical storage management are also of great help to MGI’s data lifecycle management and support non-invasive prenatal genetic testing services. “In the era of integration of IT and biotechnology, we want to join forces with Huawei to tap into more opportunities to benefit humanity using genomic technology,” Jiang says. |
| 即使某些与基因相关的疾病已出现，基因测序也可以帮助找到对应突变的基因，进而准确地进行靶向治疗，这正是精准医疗的研究方向之一。蒋慧表示：“2011年，美国医学界首次提出了‘精准医疗’的概念。精准医疗的重点不在‘医疗’，而在‘精准’。通过基因测序技术预测未来可能会患有哪些疾病，从而更好地预防；一旦患上了某种疾病，可以进行早期诊断；诊断后用药的靶向性也更强，病人将得到最合适的治疗和药物的使用，实现最佳剂量和最小副作用，以及最精准的用药时间。疾病的护理和愈后效果也能得到准确的评估和指导。”2015年1月，当时的美国总统奥巴马在国情咨文中提出“精准医疗计划”后，一时间“精准医疗”成为全球热门话题，精准医疗建设以迅雷不及掩耳之势蔓延，中国也不例外。在2016年，中国把精准医疗列入“十三五”国家科技创新规划。这成为基因技术快速发展的契机，其重点在疾病队列研究、疾病的分子分型和分期、个体化治疗、大数据的收集和挖掘等方面。2017年10月，在第十二届国际基因组学大会（The 12th Annual Meeting of the International Conference on Genomics, ICG-12）上，华大智造发布了两款新的高通量测序仪MGISEQ-2000与MGISEQ-200，同时，华大基因发布基因组解码计划GDP（Genome Decode Program），并发布了百万中国人基因数据库（CMDB, Chinese Millionome Database）。蒋慧分享道：“有了这些测序‘神器’和科研成果的加持，新一代基因测序技术带来了成本上的革命，相信在不久的将来，平均一天就能完成24个肿瘤样本的快速检测。三年内，基因组测序将进入百元人民币时代，人人都有望拥有自己的全基因组数据。24小时精准医疗（All in one day）不再遥远——基因数据的获取、分析、解读在一天内完成。”成本大幅度降低后，普通人将能够享受到基因组测序的福祉。蒋慧介绍道：“中国的出生缺陷比例较高，在5.6%左右。为了减少和预防出生缺陷的发生，从怀孕前到生产后的整个过程，人们都可以进行不同的基因检测，这对减少和预防出生缺陷有重要的作用。高通量测序仪可以进行胚胎检测和妊娠后的新生儿检测。未来，无论是科学研究还是临床医学，甚至在农林牧副渔业等领域，基因组测序都有无限的想象空间，将推动医疗和科研领域高通量测序系统的全面普及。”AI加持随着人工智能与基因测序紧密结合，基因测序行业必然迎来更大的发展空间。事实上，已经有不少互联网巨头跨界进入基因市场。如Google首先联合DNAnexus打造巨大的开放式免费基因数据库。亚马逊数据云的公共信息平台上也有类似的数据库共享。未来关于基因数据的分析也会不断涌现出更多算法。根据预测，到2020年全球基因测序市场规模将达到138亿美元，年复合增长率为18.7%。华大智造不断探索基因测序技术与AI技术相结合的成功实践，实现了健康大数据的深度挖掘和应用。蒋慧举例说：“AI技术通过对脱敏基因数据进行深入分析，可以开发出更精确的疾病、表型预测模型，构建出更精细的人群遗传结构，并有望找到新的药物靶点。无创产前基因检测本来用于唐氏综合征等胎儿染色体疾病的筛查，并不是为癌症检测设计，但得益于华大的大数据与AI技术，通过对百万样本及肿瘤基因特征进行分析，使得识别无创基因检测数据中的肿瘤信号成为可能。基于无创产前基因检测数据被早期发现的孕期肿瘤案例已逾40例，几十个家庭因为疾病的早期发现而受益。”截至2017年底，华大基因生育产品临床检测累计服务近500万人，已完成超过280万例无创产前基因检测，检出率和特异性均大于99%，检出了3.8万余例染色体异常胎儿；超过153万名新生儿或孕妇接受了耳聋基因筛查的检测服务，帮助约8万携带者防聋控聋。除了在基因测序领域的应用，蒋慧指出AI技术在医疗行业的其他应用也潜力巨大。“我国人口占世界人口总数的22%，但医疗资源仅占世界的2%。据统计，我国医疗机构80%集中在城镇，农村和偏远地区。资源严重不足，大部分高新技术、设备和优秀医护人才都集中在大城市和大医院，不能满足所有群众基本的卫生服务需求，也导致了大医院内医疗资源紧张。医疗健康的需求端急剧上升和供给端的严重不足，驱使人工智能等技术与医疗健康行业的结合。”“在客观数据的收集和分析上，人工智能的速度和能力远超人类，特别是医学影像识别领域，因为医学影像数据相对标准化，非常便于机器识别和深度学习。智能辅助诊断系统可将医生的看片时间平均减少4.25个小时，准确度提高到90%以上。这样一来，不仅医生有更多时间提高业务水平，还能够把医生‘还给’患者，让医生有更多的时间为患者提供其它诊疗。此外，人工智能技术整合基因和影像等跨组学数据，能更全面地分析疾病在不同发展阶段的内在关联性。”5G、云计算带来更多可能2018年初，华大智造交付的远程超声诊断系统MGIUS-R3在深圳罗湖医院（集团）开始试用。这种远程超声诊断系统，扩展了超声设备的应用场景，在偏远或极端环境、社康中心等地方都能发挥重要作用，突破传统超声诊疗方式的局限，克服时空障碍，有助于改善医疗资源分布不均衡的现状，同时将基因数据与影像数据进行整合，使全民平等地享受优质的精准医疗服务。一直以来，远程超声检测、远程手术等远程实时操控类应用受制于带宽和时延的苛刻要求。例如，医生手部动作、图像传输、力量反馈必须达到高度同步，这在现有网络条件下难以实现。为了解决这一难题，华为Wireless X Labs与华大智造联手探索，使用4.5G/5G网络技术为远程超声机器人提供信号和数据的连接，帮助医生远程操控病人端的超声探头，进行诊断。4.5G/5G网络具备大带宽特性，能够为现场音视频和B超图像的实时传输提供数十兆的传输带宽。另一方面，4.5G/5G网络也拥有低时延特性，病人体表的力量反馈信号在短短几毫秒内就可以传递到医生的触觉设备。此外，利用4.5G/5G网络，超声影像还能传输到云端完成实时分析，多层次辅助医生诊断。蒋慧表示，“在4.5G/5G网络助力下的远程超声诊断系统，让高灵敏度力反馈系统得以应用，能在直径为850mm的空间内进行扫查，全面满足了心脏、颈部、胸部及腹部等全身应用的检测需求；高清的视频语音系统让专家和病人沟通畅通无阻；远程调节超声图像的参数，无时延，实现实时快速诊断，提高诊疗效率。”基因测序正在从个体走向大规模群体，从科研走向广泛的商用，伴随而来的计算分析模式也逐步从本地、离线，走向云端、在线，数据产生的量越来越大。蒋慧说，“基因测序的成本在降低，数据产出的速度越来越快，纯粹依靠我们自己的能力建设大型的数据中心，已经跟不上海量数据产出的速度。我们每个月产出300TB数据，到目前已经有22个PB的数据，怎么处理这种爆炸性的数据增长？”“同时，我们的国家基因库要与合作方实现数据共享，而云计算很好地满足了这些需求。通过长期的测试和使用华为OceanStor 9000云存储系统，我们的存储性能提高了25%-30%，给用户交付报告的时间从原来的15天缩短到7天。OceanStor 9000统一的文件系统和分层的存储管理，对华大的数据生命周期管理也有很大的帮助，可应对华大无创产前基因检测业务的需求。在信息技术与生物技术融合的年代，我们希望与华为联手，发掘更多让基因科技造福人类的机会。” | Three UK: From building capacity to sci-fi |
| 智能联接：融合5G、人工智能和物联网 | Intelligent connectivity: The fusion of 5G, AI, and IoT |
| 即使某些与基因相关的疾病已出现，基因测序也可以帮助找到对应突变的基因，进而准确地进行靶向治疗，这正是精准医疗的研究方向之一。蒋慧表示：“2011年，美国医学界首次提出了‘精准医疗’的概念。精准医疗的重点不在‘医疗’，而在‘精准’。通过基因测序技术预测未来可能会患有哪些疾病，从而更好地预防；一旦患上了某种疾病，可以进行早期诊断；诊断后用药的靶向性也更强，病人将得到最合适的治疗和药物的使用，实现最佳剂量和最小副作用，以及最精准的用药时间。疾病的护理和愈后效果也能得到准确的评估和指导。”2015年1月，当时的美国总统奥巴马在国情咨文中提出“精准医疗计划”后，一时间“精准医疗”成为全球热门话题，精准医疗建设以迅雷不及掩耳之势蔓延，中国也不例外。在2016年，中国把精准医疗列入“十三五”国家科技创新规划。这成为基因技术快速发展的契机，其重点在疾病队列研究、疾病的分子分型和分期、个体化治疗、大数据的收集和挖掘等方面。2017年10月，在第十二届国际基因组学大会（The 12th Annual Meeting of the International Conference on Genomics, ICG-12）上，华大智造发布了两款新的高通量测序仪MGISEQ-2000与MGISEQ-200，同时，华大基因发布基因组解码计划GDP（Genome Decode Program），并发布了百万中国人基因数据库（CMDB, Chinese Millionome Database）。蒋慧分享道：“有了这些测序‘神器’和科研成果的加持，新一代基因测序技术带来了成本上的革命，相信在不久的将来，平均一天就能完成24个肿瘤样本的快速检测。三年内，基因组测序将进入百元人民币时代，人人都有望拥有自己的全基因组数据。24小时精准医疗（All in one day）不再遥远——基因数据的获取、分析、解读在一天内完成。”成本大幅度降低后，普通人将能够享受到基因组测序的福祉。蒋慧介绍道：“中国的出生缺陷比例较高，在5.6%左右。为了减少和预防出生缺陷的发生，从怀孕前到生产后的整个过程，人们都可以进行不同的基因检测，这对减少和预防出生缺陷有重要的作用。高通量测序仪可以进行胚胎检测和妊娠后的新生儿检测。未来，无论是科学研究还是临床医学，甚至在农林牧副渔业等领域，基因组测序都有无限的想象空间，将推动医疗和科研领域高通量测序系统的全面普及。”AI加持随着人工智能与基因测序紧密结合，基因测序行业必然迎来更大的发展空间。事实上，已经有不少互联网巨头跨界进入基因市场。如Google首先联合DNAnexus打造巨大的开放式免费基因数据库。亚马逊数据云的公共信息平台上也有类似的数据库共享。未来关于基因数据的分析也会不断涌现出更多算法。根据预测，到2020年全球基因测序市场规模将达到138亿美元，年复合增长率为18.7%。华大智造不断探索基因测序技术与AI技术相结合的成功实践，实现了健康大数据的深度挖掘和应用。蒋慧举例说：“AI技术通过对脱敏基因数据进行深入分析，可以开发出更精确的疾病、表型预测模型，构建出更精细的人群遗传结构，并有望找到新的药物靶点。无创产前基因检测本来用于唐氏综合征等胎儿染色体疾病的筛查，并不是为癌症检测设计，但得益于华大的大数据与AI技术，通过对百万样本及肿瘤基因特征进行分析，使得识别无创基因检测数据中的肿瘤信号成为可能。基于无创产前基因检测数据被早期发现的孕期肿瘤案例已逾40例，几十个家庭因为疾病的早期发现而受益。”截至2017年底，华大基因生育产品临床检测累计服务近500万人，已完成超过280万例无创产前基因检测，检出率和特异性均大于99%，检出了3.8万余例染色体异常胎儿；超过153万名新生儿或孕妇接受了耳聋基因筛查的检测服务，帮助约8万携带者防聋控聋。除了在基因测序领域的应用，蒋慧指出AI技术在医疗行业的其他应用也潜力巨大。“我国人口占世界人口总数的22%，但医疗资源仅占世界的2%。据统计，我国医疗机构80%集中在城镇，农村和偏远地区。资源严重不足，大部分高新技术、设备和优秀医护人才都集中在大城市和大医院，不能满足所有群众基本的卫生服务需求，也导致了大医院内医疗资源紧张。医疗健康的需求端急剧上升和供给端的严重不足，驱使人工智能等技术与医疗健康行业的结合。”“在客观数据的收集和分析上，人工智能的速度和能力远超人类，特别是医学影像识别领域，因为医学影像数据相对标准化，非常便于机器识别和深度学习。智能辅助诊断系统可将医生的看片时间平均减少4.25个小时，准确度提高到90%以上。这样一来，不仅医生有更多时间提高业务水平，还能够把医生‘还给’患者，让医生有更多的时间为患者提供其它诊疗。此外，人工智能技术整合基因和影像等跨组学数据，能更全面地分析疾病在不同发展阶段的内在关联性。”5G、云计算带来更多可能2018年初，华大智造交付的远程超声诊断系统MGIUS-R3在深圳罗湖医院（集团）开始试用。这种远程超声诊断系统，扩展了超声设备的应用场景，在偏远或极端环境、社康中心等地方都能发挥重要作用，突破传统超声诊疗方式的局限，克服时空障碍，有助于改善医疗资源分布不均衡的现状，同时将基因数据与影像数据进行整合，使全民平等地享受优质的精准医疗服务。一直以来，远程超声检测、远程手术等远程实时操控类应用受制于带宽和时延的苛刻要求。例如，医生手部动作、图像传输、力量反馈必须达到高度同步，这在现有网络条件下难以实现。为了解决这一难题，华为Wireless X Labs与华大智造联手探索，使用4.5G/5G网络技术为远程超声机器人提供信号和数据的连接，帮助医生远程操控病人端的超声探头，进行诊断。4.5G/5G网络具备大带宽特性，能够为现场音视频和B超图像的实时传输提供数十兆的传输带宽。另一方面，4.5G/5G网络也拥有低时延特性，病人体表的力量反馈信号在短短几毫秒内就可以传递到医生的触觉设备。此外，利用4.5G/5G网络，超声影像还能传输到云端完成实时分析，多层次辅助医生诊断。蒋慧表示，“在4.5G/5G网络助力下的远程超声诊断系统，让高灵敏度力反馈系统得以应用，能在直径为850mm的空间内进行扫查，全面满足了心脏、颈部、胸部及腹部等全身应用的检测需求；高清的视频语音系统让专家和病人沟通畅通无阻；远程调节超声图像的参数，无时延，实现实时快速诊断，提高诊疗效率。”基因测序正在从个体走向大规模群体，从科研走向广泛的商用，伴随而来的计算分析模式也逐步从本地、离线，走向云端、在线，数据产生的量越来越大。蒋慧说，“基因测序的成本在降低，数据产出的速度越来越快，纯粹依靠我们自己的能力建设大型的数据中心，已经跟不上海量数据产出的速度。我们每个月产出300TB数据，到目前已经有22个PB的数据，怎么处理这种爆炸性的数据增长？”“同时，我们的国家基因库要与合作方实现数据共享，而云计算很好地满足了这些需求。通过长期的测试和使用华为OceanStor 9000云存储系统，我们的存储性能提高了25%-30%，给用户交付报告的时间从原来的15天缩短到7天。OceanStor 9000统一的文件系统和分层的存储管理，对华大的数据生命周期管理也有很大的帮助，可应对华大无创产前基因检测业务的需求。在信息技术与生物技术融合的年代，我们希望与华为联手，发掘更多让基因科技造福人类的机会。” | Why natural language processing is AI’s jewel in the crown |
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| 随着公众对移动视频的日益青睐，在短短两年间，Turkcell成功发展了100万TV+用户。展望未来，这家土耳其电信运营商对视频这一新的业务增长引擎充满信心，其市场总监Ismail Butun娓娓道出个中缘由。视频业务占先机近年来，电信运营商的业务增长停滞不前、利润下滑，这已经不是秘密。为了对抗来自OTT的竞争，紧跟用户不断变化的需求，运营商们一直不遗余力寻求新的增长点。Turkcell的市场总监Butun，在加入Turkcell之前在快消品行业工作了16年，他非常乐观地相信，现在对于Turkcell来说是很好的时机，“从旁观者的角度，你能看到数不清的机会，身处充满机遇的电信行业，我们应该感到庆幸。”他认为移动视频就是巨大的机遇。像所有CXO一样，Butun密切关注行业发展趋势，其中移动数据领域的变化更是让他兴奋不已。StatCounter的统计数据显示，2016年11月，手持设备的web浏览量第一次超过了电脑，标志着Butun所说的“历史性时刻”已经到来。我们有理由相信这一趋势会继续延续。例如，思科网络可视指数（Visual Networking Index），预测全球移动数据流量会在2016年到2021年之间，增长7倍。“移动视频流量在2016年占到了移动数据总流量的60%，到2021年，移动视频将会贡献超过78%的移动流量，”Butun还指出，“随着Turkcell从网络运营商，向客户体验服务商转型，移动业务和视频将成为业务重心。”Butun认为，在视频领域，Turkcell凭借优良的网络设施和巨大的客户基数，在市场上占据了特殊的位置。Turkcell的业务遍布9个国家，拥有6890万用户。在土耳其，它是拥有3400万用户基数的顶级移动运营商。在市场定位方面，Turkcell是提供固话、移动宽带、TV、音乐服务的综合运营商。按Butun所说，“我们有能力提供端到端的综合服务。”截至2016年7月，Turkcell为250万家庭部署了光纤宽带。在土耳其，其拥有的客户信息量，仅次于土耳其卫生部。Turkcell在2014年底推出了电视平台，有两个产品在市场上大获成功，即服务于家庭用户的IPTV和服务于移动用户的OTT产品。两种产品均包含在各种四合一（quad-play）业务套餐中。其业务表现从一开始就很稳定，在第一年吸引了56万用户。2016年，Turkcell又实现了两个里程碑事件，一是4.5G网络开通上线，紧接着在两个月后推出了4K流媒体业务。除了技术的升级，服务内容也越来越丰富，比如，英国足球超级联赛和NBA于2016年9月在Turkcell的电视平台上推出。Turkcell还在2016年新增了50多个高清频道，包括动物星球、探索频道、迪士尼节目和其它两个热门体育频道。“我们的内容比往年更加丰富，” Butun称。“这赋予我们有利的市场地位。同时，受益于4.5G网络的应用，4K高清带给用户极好的网络视频体验，收益明显。”有数据表明，截至2016年底，Turkcell吸引了超过100万电视用户。“我们有36万IPTV业务用户，以及70万OTT业务用户。”内容和网络双管齐下Turkcell的TV+业务基于云平台，支持节目回看和视频点播，其提供了个性化和交互式的服务体验，使观众可以分享喜爱的和不喜爱的内容。但是，Butun认为，TV+的最大优势是多屏无缝衔接体验，“IPTV用户可以在电视上看电影或足球；外出时，可以在平板或手机上继续观看。”这个业务同时还提供4个流媒体频道，实实在在地提升了用户体验。不仅如此，业务套餐中包含流量费，用户无需担心收到高额数据流量账单，“TV+业务不会在流量费用方面吓着用户，但在用户体验上却会有惊喜。”Butun这样说道。Butun指出了Turkcell在TV市场策略上的两个主要成功因素，“丰富的内容和出色的网络设施”。当然这不是新概念，是强有力的执行使Turkcell的TV+业务从竞争产品中脱颖而出。在一个普通的OTT互联网电视平台，用户通常能够点播电影和电视节目。而Turkcell的平台除了点播服务，可供用户选择的有120多个直播频道，包括所有国家频道和大部分地方频道。当谈到网络时，Butun评论，“3G很不错，4G也很好。但当我们在2016年启动4.5G网络建设时，一切确实发生了改变。”除了购买了土耳其47%的可用无线频谱资源，Turkcell还拥有这个国家最快的移动网络和固网。其移动网络以375Mbps的下载速率记录，赢得了2016年Ookla网速奖项。 Butun说，“我们以网络设施为荣。这一点很重要，因为再丰富的视频内容如果总是在等待缓冲，也不可能获得成功。”电视节目的消费量也在不断上升——在LTE（4G）之前，单个用户平均每天看大约7分钟的电视，而现在是40分钟。“这个电视流量是无比巨大的。”Butun说。“那就是我们的目标，而且我们已经提前完成了计划。”未来可期Butun非常看好用户数量的增长，“在土耳其，有2100万家庭和8000万人口。而目前，我们还只有100万用户。所以，仍然有很大的发展空间。”虽然没有给出具体的增长预测数据，Butun提到Turkcell可能会上调其目标，这是因为当前的增长已经超过了原定目标。由于内容的原因，电视业务成本高昂，Turkcell需要合适的商业模式。“为了证明内容值得投资，我们需要建立可持续发展的商业模式，提供不同的内容产品包，并且设计不同套餐，实现中间价格点，从而增加ARPU。”为了始终如一地提供一流质量的视频流媒体服务，这家运营商准备在不久的将来，从高清升级到超高清，这也是华为可以发力的地方。“华为不仅是基础设施供应商，同时也是电视平台的供应商，” Butun说道，“华为每个月都为我们的IPTV和OTT业务开发出新的功能和特性，而我们希望开发节奏能更快一些。”Turkcell还在其它诸如CDN和视频压缩的关键技术领域进行研发。对于Butun来说，整个电视业务不仅仅在于技术本身，“在未来5年内，不管我们做什么、引入什么技术，我们都应该牢记，终极目标是与客户建立联接。” | Riding on the public’s burgeoning love affair with mobile video, Turkcell managed to grow its TV+ subscriber base to 1 million in just two years. Moving forward, Turkey’s leading telco has great confidence in video as a new growth catalyst and CMO Ismail Butun explains why.Big opportunitiesIt’s no secret that telcos have suffered stagnant growth and declining margins over the past few years. To compete against OTT players and stay relevant to subscribers’ changing lifestyles, they’re invariably seeking new avenues of growth. Turkcell’s Butun, who had worked in FMCG for 16 years before joining Turkcell, is optimistic, believing now to be a time of opportunity for telcos, “When you look in from the outside, you can see there’s a lot of opportunity and we’re so lucky to be in this industry.” And one big opportunity, he says, is mobile video. Like any CXO, Butun keeps a close eye on industry trends and is particularly excited about what he’s seeing with mobile data. According to StatCounter, people browsed more on mobile devices than on PCs for the first time in November 2016, marking what Butun describes as “a historic moment.” This is a trend that we can expect to continue – the Visual Networking Index, for example, holds that global mobile data traffic will increase sevenfold between 2016 and 2021.“Mobile video traffic accounted for 60 percent of total mobile data traffic in 2016 and over 78 percent of the world’s mobile data traffic will be video by 2021,” says Butun. “As Turkcell is shifting from being a network provider to a customer experience provider, mobile and video is our main focus.”  A perfect stormWhen it comes to video, he believes that Turkcell holds a unique position based on its infrastructure and customer data. The telco serves 68.9 million subscribers  across nine countries, and is the leading mobile operator in Turkey with a subscriber base of 34 million. In terms of market positioning, Turkcell is a converged operator that delivers fixed and mobile broadband, TV, and music services. According to Butun, “We have the capability to provide end-to-end and integrated services. So we see ourselves standing in the middle of a perfect storm.” The operator had made fiber available to 2.5 million homes as of July 2016, and – after the Health Ministry – holds more customer data than any other domestic company. Turkcell launched its TV platform towards the end of 2014. It hit the market with two product forms – IPTV for household users and an OTT product for mobile users, both available in various quad-play packages. Service performance was solid from the start, attracting 560,000 subscribers in the first year. Then two more milestones were reached in 2016 – April saw the launch of Turkcell’s 4.5G network, which was followed by the introduction of 4K streaming services two months later. Added to the tech came richer content in the shape of the English Premier League and NBA, which were rolled out on the TV platform in September 2016. In fact, the operator added more than 50 HD channels last year, including Animal Planet, Discovery, and Disney, as well as the two sports favorites. “Our content is really much richer than last year,” acknowledges Butun. “That gave us a good position in the market place. And 4K, with superior network experience thanks to the 4.5G network, has really paid off.” The figures agree: By the end of 2016, Turkcell had attracted over 1 million TV subscribers. “On the IPTV side, we have 360,000 subscribers, and on OTT side we have 700,000.” Content + InfrastructureTurkcell’s TV+ service is cloud-based and supports timeshift and VoD. The offering is personalized and interactive, as viewers can share what they like. But, Butun believes that the biggest strength of TV+ is the seamless multi-screen experience, “If you’re an IPTV subscriber and start a movie or football game on TV, you can turn on your tablet or use your mobile phone to continue watching if you go out.” The offering also provides four streaming channels, which really adds value to customer experience. Moreover, with data bundled into packages, subscribers don’t face bill shocks, “There are no big surprises, only a good surprise on the experience side,” says Butun.He pinpoints the two main success factors in Turkcell’s TV strategy, “Rich content and a really good infrastructure.” Though these are not new concepts, execution is the factor that sets Turkcell’s TV+ offering apart from rival products. On a standard OTT TV platform, you normally have VoD for movies and TV shows. But on Turkcell’s platform, customers can choose from more “than 120 live channels, covering all national channels and most local TV channels, in addition to VoD services,” explains Butun. The power of 4.5GWhen it comes to networks, he observes that, “3G is good, 4G is good too. But when we launched 4.5G [in 2016], it really made a difference.” Having acquired 47 percent of the total spectrum available in the country, Turkcell also boasts the fastest mobile and fixed Internet in Turkey, with the Ookla 2016 speed awards recording a download speed of 375 Mbps on its mobile network. “We provide the fastest mobile Internet connection in the world,” says Butun. “We’re proud of our infrastructure. That’s important because rich content won’t be successful if it’s always buffering.”In 2014, the peak download speed recorded was 1.6 Gbps. By 2016, it had jumped up by almost 18 times to reach 24 Gbps, which is expected to rise to 29 Gbps by the end of 2017. The amount of TV consumed is also on the up – before LTE, it was around 7 minutes a day per subscriber, but now it’s 40 minutes. “It’s huge, huge traffic,” states Butun. “That was our goal, and we reached it earlier than planned”What’s next?As a result, he’s bullish about subscriber numbers, “In Turkey there are 21 million households and 80 million people. At the moment, we have 1 million subscribers. So, there’s still a big space to move forwards.” Without giving specific numbers on growth forecasts, Butun hints that Turkcell may adjust its goals upwards because current growth is already exceeding targets. However, the telco knows that it needs to run the right business model, because the TV business is very costly due to content. “To justify investing in content, you have to establish a very sustainable business model. You have to find middle price points with different packages for a varied content portfolio to increase ARPU.”To consistently deliver the highest quality video streaming service, the telco is looking to upgrade from HD to UHD in the near future, which is where Huawei comes in, “Huawei is both our infrastructure and TV platform provider,” states Butun. “It develops new features for IPTV and OTT every month. And we expect this to get even faster.” Other key technology areas the telco is working on include CDN and video compression. For Butun however, the whole TV business isn’t about technology per se, “Whatever we do in the next five years, whatever new technologies come, we should never forget that the real connections we want to make is with people.” |
| 从做手机电池起家，到新能源汽车引领者，再到光伏储能领域，比亚迪自1995年创立以来一直在扩大商业版图。特别是近5年，比亚迪不懈追逐“绿色梦想”，业务已拓展至电子、汽车、新能源和轨道交通等领域，从能源的获取、存储，再到应用，全方位构建零排放的新能源整体解决方案，令世人瞩目。面对全球性的城市交通拥堵问题，比亚迪认为应该大力发展轨道交通，并打造立体化的交通网络，把地下、地面、空中全部利用起来。于是，跨座式单轨项目“云轨”应运而生。作为轨道交通领域的新进入者，比亚迪历时5年研发而成的云轨，能否延续过去20年的商业神话，比亚迪董事长兼总裁王传福对此信心满满，他详细讲述了云轨如何成为城市治堵神器，助力城市智能交通体系发展。构建“轨道上的城市”谈到云轨最初想法的来源，王传福表示还要从自己亲历的“一桩堵车故事”说起。王传福6年前去北京出差时，突发的大雨让北京全城陷入瘫痪，让他花了4、5个小时从西直门到机场。“当时（堵车）我的印象就特别深刻”，王传福表示。事后第二周，王传福去日本东京出差，发现东京的交通很畅顺。查阅资料后，他发现与北京相比，东京其实是“车多路少”。道路的通畅并非因为马路多或者人口稀疏。这一查，让王传福更为好奇，日本到底是怎么解决“堵车”这个问题？王传福谈到，东京是一座轨道上的城市，有85%至90%的人在工作日选择公共交通。“我认为中国未来要实现轨道上的城市，这是中国要发展的一个阶段。中国正处于全球规模最大的城市化进程，预计到2020年城镇常住人口率为60%，城镇常住人口数将达到8.5亿人；从2012年到2016年，我国汽车产销从1930万辆到2800万辆，连续保持世界第一，成为名副其实的汽车大国。大规模的汽车普及和城市化叠加，让城市道路不堪重负。”在王传福看来，“未来云轨将主要满足的是地级市的需要。这些城市的汽车增量是每年15%，道路增量只有1%，买车是生活越来越好的人群的刚需，而拥堵不可避免，解决方案只有发展公共交通。”用50亿撬动10万亿大蛋糕通过投资50亿元研发云轨技术，比亚迪正式进军万亿级轨道交通领域，为走向下一个高速成长期奠定基础。作为拥有100%自主知识产权的跨坐式单轨，云轨最显著的优点是“经济性高”，可以大幅减轻中小城市财政负担。王传福表示，“云轨造价仅为地铁的五分之一，建设周期也只有地铁的三分之一。像汕头这样的地级市在中国有273个。273乘以400亿元，市场蛋糕是十万亿元级。”另外云轨是跨座式单轨，占地面积小、爬坡能力强、转弯半径小，类似于“空中小火车”，最高时速可达80km。王传福对云轨的市场定位十分清晰。他认为，地铁、高铁是大运量的交通系统，而云轨是中小运量，更适合中型城市及大型城市的郊区。谁抢占到这块蓝海，谁就能获得巨大的市场。“云轨是比亚迪针对世界各国城市拥堵问题推出的战略性解决方案。作为中小运量的轨道交通产品，云轨可与现有公共交通系统结合，打造地下、地面和空中的立体化交通网络，可广泛用于一、二线城市的交通接驳线、加密线，以及三、四线城市的交通主干线，还有旅游景区的观光线等。”云轨闪耀银川花博园2017年9月1日，首条云轨在银川市花博园正式投入商业运营，也让银川结束了没有轨道交通的历史。游客搭乘云轨，俯瞰花海丛林，以最好的视角游览花博园。据不完全统计，开通当天有大约4万人次体验了比亚迪云轨，9月2日、3日迎来花博园开园的首个周末观园高峰，单日乘坐游客超过6万人次。由于花博园云轨目前主要用于旅游观光，车速被限制在25km/h，噪音几不可闻，即便车辆在站台上擦肩而过也听不到任何噪音。王传福细数了建造银川花博园云轨项目的过程。“自开工到建成正式通车，不到半年时间完成了基础建设、钢立柱吊装、轨道梁架设、机电通信设备、储能电站等工作。”云轨的每节车厢里设有高速无线宽带服务，乘客在线玩网络游戏不成问题，分享照片、视频等到朋友圈，更不在话下。对于经常因玩手机而坐过站的小伙伴来说，还有一大福利，就是到站提醒。与此同时，依托客流实时监测技术，乘客能实时收到站台及车厢拥挤度提示，便于避开拥堵区，直接去往舒适区。王传福骄傲地说，“由于观园人数超出预期，我们启动了预案，原计划备用的1列云轨也投入运营，所有7列云轨满负荷运营，而且零安全故障，零乘客投诉，准点率超过99％，近乎完美。”自“云轨”推出以来，除银川外，比亚迪已与国内多个城市签约。2017年8月22日，比亚迪与菲律宾伊洛伊洛市签约，计划于2019年建成20多公里的云轨，也预示着“云轨”未来将服务更多的海外地区。与黑科技联姻未来，无人驾驶系统将是云轨的高科技主打配置。无人驾驶分为四个等级，而比亚迪的无人驾驶系统已经达到最高等级——全自动无人驾驶（UTO），可实现全自动运行，并且还具有安全追踪间隔最小、断电无人驾驶、自动诊断、休眠唤醒、客流实时监测、人脸识别等多项功能。每天清晨，云轨会自动“清醒”，在完成牵引、制动、车门、照明、电池、空调等多项检测之后，自动上线，随后自动运行，在完成既定工作后，自动“回家”、“休眠”。在车辆运行前、运行时，云轨会进行自我诊断，完成包括全系统的300多项检测。在极端温度条件下，该系统依旧能正常工作，既能适应-40℃的低温，也能经受80℃的高温挑战。王传福特别指出了云轨的一项功能，“在市电中断的情况下，云轨可自动切换成车载动力电池供电，并在无人驾驶模式下，驱动车辆安全运行至车站。”云轨无人驾驶，除了需要比亚迪的控制技术及定位技术之外，还离不开华为的eLTE通信技术，即4.5G轨道交通无线专网。如果说比亚迪云轨的无人驾驶系统是人脑的决策系统，那么华为4.5G轨道交通无线专网的作用是为云轨无人驾驶提供快速、高效的信息输送通道，两者默契配合才能让无人驾驶变得可控、安全。需要特别提及的是，云轨无人驾驶系统应用的4.5G轨道交通无线专网主要拥有三大亮点。首先，受益于4.5G技术的高可靠、低时延优势，结合A+B双网配置，eLTE为云轨无人驾驶系统提供了更可靠的通信网络，保障列车行进中的切换低时延和业务连续性，让云轨运行更可靠。其次，面对可能的干扰，eLTE有先进的抗干扰技术，辅之以端到端加密鉴权等算法，使得车地通信更安全、更稳定。另外，eLTE在覆盖能力、多用户接入能力以及QoS保障机制方面的优势，使得列车运行信号、PIS（Passenger Information System）和CCTV（Closed-Circuit Television）等多业务能一网承载，至简网络打造智能车地通信。华为一直秉持开放合作的原则，与比亚迪云轨各项应用、行业终端厂家进行了深度行业适配，打造多方共赢的新生态。谈及与伙伴的合作，王传福表示，“华为4.5G轨道无线专网代表了行业无线的发展趋势，契合了云轨发展的需要，更可靠、更高效、更智能。比亚迪始终坚持用技术创新满足人们对美好生活的向往，随着搭载无人驾驶系统的云轨在全球各地落地开花，更多的市民将可以乘坐云轨，获得便捷、智能、可靠的出行服务。”此外，王传福希望比亚迪参与到更多轨道交通业务的运营中，并促成全球供应链的协作，在拉近人与人之间物理的距离方面发挥更大作用。 | BYD has greatly expanded its commercial footprint since 1995, when it hit the tech scene as a battery producer for cell phones. Today, the Chinese company has emerged as a leader in new energy vehicles and photovoltaic energy storage technology as part of its “Four Green Dreams” strategy, covering solar power plants, battery storage power plants, electric cars, and rail transit.Given today’s ubiquitous traffic congestion, BYD believes the solution lies in 3D traffic networks that combine underground, ground, and air transport. This belief led to the genesis of its straddle monorail project, SkyRail. With five years of development under its belt, BYD Chairman and President Wang Chuanfu feels that SkyRail can forge the silver bullet that will stop urban congestion in its tracks and make transportation truly smart.Building cities on railsWang cites a past gridlock experience as his inspiration for SkyRail. On business in Beijing six years ago, a sudden rainstorm brought the entire city to a standstill – as a result, it took him four or five hours to get from Xizhimen to the airport. “That [traffic jam] left a particularly deep impression on me,” says Wang. The next week, he visited Tokyo and, despite more cars and fewer roads relative to Beijing, the traffic ran smoothly. On investigation, he observed that, “Tokyo is a city of railways, with 85 to 90 percent of the population opting for public transportation on weekdays.” In contrast, says Wang, “Cities on rails is the future [for China] because the popularization of cars and urbanization have overwhelmed urban roads.” The stats support his view: From 2012 to 2016, automobile production and sales in China rose from 19.3 million to 28 million vehicles per year, while the nation’s rapid urbanization will mean that 60 percent of the nation’s population ─ some 850 million people ─ will be living in cities by 2020 if current estimates pan out.According to Wang, SkyRail will mainly meet the needs of second- and third-tier cities, “The number of cars in these cities is increasing by 15 percent per annum, but the number of roads is growing at just 1 percent,” he says. “As people’s standard of living improves, buying a car has become a must-have and so congestion is inevitable. The solution is public transportation.”Investing 5 billion yuan to unlock a one trillion-yuan doorBYD formally entered the trillion-yuan rail transit industry with a 5 billion yuan investment in SkyRail tech R&D in 2012, and the company fully owns the IPR for the SkyRail monorail system. The most obvious advantage of SkyRail is that it’s relatively cheap, so small- and medium-sized cities can benefit in a way that extremely expensive subway construction doesn’t allow. According to Wang, “Building a 1-kilometer length of subway costs 1 billion yuan, compared with 200 million yuan for the same length of SkyRail, just one-fifth of the cost, and the construction time is up to 75 percent faster.” He mentions that there are 273 prefecture-level cities like Shantou in China. “It’s not feasible to build metro systems in medium-sized cities such as these,” he says. “But, multiplying 273 by 40 billion yuan gives you a market size of over 1-trillion yuan.” As a straddle monorail, SkyRail covers a small area, has a good ability to climb and a small turning circle, and can hit speeds of up to 80 km/h.Wang is crystal clear about SkyRail’s market positioning. He believes that subways and high-speed railways are high-capacity traffic systems, whereas SkyRail is a medium-capacity system that’s a seamless fit for medium-sized cities and the suburbs of large cities. “SkyRail can be integrated with existing public transport systems to create three-dimensional transport networks consisting of underground, surface and air transportation,” says Wang. “In the transit systems of first- and second-tier cities, SkyRail can be widely used for feeder lines and new lines, and as main trunk lines in third- and fourth-tier cities, as well as for sightseeing lines for tourist attractions.”SkyRail blooms at Yinchuan Flower ExpoOn September 1, 2017, the first SkyRail line went into commercial operation at the Flower Expo in Yinchuan, marking the city’s first ever rail transit system and giving SkyRail users the best view of the sea of flowers on show. Around 40,000 people were estimated to have used the system on launch day, rising to more than 60,000 more each day on September 2 and 3 ─ the peak first weekend of the expo. As a tourist carrier, SkyRail’s speed in this scenario was limited to a sedate and barely audible 25 km/h.“The project got underway on April 18 and by August 31, the railway was officially up and running,” explains Wang, describing just how fast the project got off the ground. “In just over four months, work on infrastructure construction, steel column hoisting, track girder installation, mechanical and electrical communications equipment, and battery storage power station was completed.” Neither the rapid turnaround nor the heavy initial use affected quality, however. “Because the number of people visiting the garden exceeded our expectations, we launched a plan to run a backup SkyRail,” says Wang. “All seven of the SkyRail trains ran at full capacity with zero safety faults or passenger complaints, and on-time rates exceeded 99 percent. It went almost perfectly.”Each SkyRail car is equipped with high-speed wireless broadband services, so passengers can easily share photos and videos. Based on real-time passenger flow monitoring technology, announcements about congested areas are played on platforms and in cabins in real-time, so passengers can plan their routes.Since the launch of SkyRail, BYD has signed contracts with over a dozen cities, including Shantou, Shenzhen, Bengbu, and Guilin, as well as Yinchuan. On August 22, 2017, the company also signed a contract with Iloilo City in the Philippines to build a SkyRail of over 20 kilometers in 2019, an indication that SkyRail will be rolled out in more overseas regions in the future.The fast track to autonomyIn the future, SkyRail will adopt a high-tech driverless system, with BYD tech providing the highest level of automation out of the four possible for rail systems. Unattended train operation (UTO) delivers full automation, enabling the shortest safe train headway, automated diagnosis, automated sleep and wake-up capabilities, real-time passenger flow monitoring, facial recognition, and full automation during power failures. “In the event of a mains failure, SkyRail can automatically switch to an onboard battery and drive safely to the next station in driverless mode,” says Wang.Each morning, SkyRail trains can automatically wake up and enter the network after carrying out traction, braking, doors, lighting, batteries, and air conditioning tests. They’re then able to operate automatically and, after completing their set schedules, automatically return home and sleep. Before and during operation, SkyRail trains carry out self-diagnostics comprising more than 300 tests on their entire system. The system also works perfectly well in extreme temperatures, able to adapt to lows of -40 °C and withstand highs of up to 80 °C.As well as BYD’s control and positioning technology, SkyRail uses Huawei’s eLTE communications technology in the shape of its 4.5G rail wireless network, which acts as a channel for the fast and efficient transmission of information. The Huawei solution has three important advantages: First, thanks to 4.5G’s high reliability, low latency, and A+B dual-network configuration, eLTE provides a more reliable communication network for SkyRail’s driverless systems ensure low-latency service handover and service continuity when the trains are moving, which increases SkyRail’s reliability.Second, eLTE’s advanced anti-interference technology can handle interference by virtue of end-to-end encryption and authentication algorithms, making car-ground communication more secure and stable.Third, eLTE’s advantages in coverage capabilities, multi-user access capabilities, and QoS guarantees mean multiple services like railway signaling, passenger information systems, and closed-circuit television can be carried over a single network, enabling simple and smart car-to-ground communication over the network. According to Wang, “Huawei’s 4.5G wireless network for railways meets SkyRail’s requirements for reliability, efficiency, and intelligence.”Already off to a great start, BYD hopes to play a greater role in narrowing the physical distance between people by expanding its operations on a global scale and building a strong collaborative ecosystem. |
| 从做手机电池起家，到新能源汽车引领者，再到光伏储能领域，比亚迪自1995年创立以来一直在扩大商业版图。特别是近5年，比亚迪不懈追逐“绿色梦想”，业务已拓展至电子、汽车、新能源和轨道交通等领域，从能源的获取、存储，再到应用，全方位构建零排放的新能源整体解决方案，令世人瞩目。面对全球性的城市交通拥堵问题，比亚迪认为应该大力发展轨道交通，并打造立体化的交通网络，把地下、地面、空中全部利用起来。于是，跨座式单轨项目“云轨”应运而生。作为轨道交通领域的新进入者，比亚迪历时5年研发而成的云轨，能否延续过去20年的商业神话，比亚迪董事长兼总裁王传福对此信心满满，他详细讲述了云轨如何成为城市治堵神器，助力城市智能交通体系发展。构建“轨道上的城市”谈到云轨最初想法的来源，王传福表示还要从自己亲历的“一桩堵车故事”说起。王传福6年前去北京出差时，突发的大雨让北京全城陷入瘫痪，让他花了4、5个小时从西直门到机场。“当时（堵车）我的印象就特别深刻”，王传福表示。事后第二周，王传福去日本东京出差，发现东京的交通很畅顺。查阅资料后，他发现与北京相比，东京其实是“车多路少”。道路的通畅并非因为马路多或者人口稀疏。这一查，让王传福更为好奇，日本到底是怎么解决“堵车”这个问题？王传福谈到，东京是一座轨道上的城市，有85%至90%的人在工作日选择公共交通。“我认为中国未来要实现轨道上的城市，这是中国要发展的一个阶段。中国正处于全球规模最大的城市化进程，预计到2020年城镇常住人口率为60%，城镇常住人口数将达到8.5亿人；从2012年到2016年，我国汽车产销从1930万辆到2800万辆，连续保持世界第一，成为名副其实的汽车大国。大规模的汽车普及和城市化叠加，让城市道路不堪重负。”在王传福看来，“未来云轨将主要满足的是地级市的需要。这些城市的汽车增量是每年15%，道路增量只有1%，买车是生活越来越好的人群的刚需，而拥堵不可避免，解决方案只有发展公共交通。”用50亿撬动10万亿大蛋糕通过投资50亿元研发云轨技术，比亚迪正式进军万亿级轨道交通领域，为走向下一个高速成长期奠定基础。作为拥有100%自主知识产权的跨坐式单轨，云轨最显著的优点是“经济性高”，可以大幅减轻中小城市财政负担。王传福表示，“云轨造价仅为地铁的五分之一，建设周期也只有地铁的三分之一。像汕头这样的地级市在中国有273个。273乘以400亿元，市场蛋糕是十万亿元级。”另外云轨是跨座式单轨，占地面积小、爬坡能力强、转弯半径小，类似于“空中小火车”，最高时速可达80km。王传福对云轨的市场定位十分清晰。他认为，地铁、高铁是大运量的交通系统，而云轨是中小运量，更适合中型城市及大型城市的郊区。谁抢占到这块蓝海，谁就能获得巨大的市场。“云轨是比亚迪针对世界各国城市拥堵问题推出的战略性解决方案。作为中小运量的轨道交通产品，云轨可与现有公共交通系统结合，打造地下、地面和空中的立体化交通网络，可广泛用于一、二线城市的交通接驳线、加密线，以及三、四线城市的交通主干线，还有旅游景区的观光线等。”云轨闪耀银川花博园2017年9月1日，首条云轨在银川市花博园正式投入商业运营，也让银川结束了没有轨道交通的历史。游客搭乘云轨，俯瞰花海丛林，以最好的视角游览花博园。据不完全统计，开通当天有大约4万人次体验了比亚迪云轨，9月2日、3日迎来花博园开园的首个周末观园高峰，单日乘坐游客超过6万人次。由于花博园云轨目前主要用于旅游观光，车速被限制在25km/h，噪音几不可闻，即便车辆在站台上擦肩而过也听不到任何噪音。王传福细数了建造银川花博园云轨项目的过程。“自开工到建成正式通车，不到半年时间完成了基础建设、钢立柱吊装、轨道梁架设、机电通信设备、储能电站等工作。”云轨的每节车厢里设有高速无线宽带服务，乘客在线玩网络游戏不成问题，分享照片、视频等到朋友圈，更不在话下。对于经常因玩手机而坐过站的小伙伴来说，还有一大福利，就是到站提醒。与此同时，依托客流实时监测技术，乘客能实时收到站台及车厢拥挤度提示，便于避开拥堵区，直接去往舒适区。王传福骄傲地说，“由于观园人数超出预期，我们启动了预案，原计划备用的1列云轨也投入运营，所有7列云轨满负荷运营，而且零安全故障，零乘客投诉，准点率超过99％，近乎完美。”自“云轨”推出以来，除银川外，比亚迪已与国内多个城市签约。2017年8月22日，比亚迪与菲律宾伊洛伊洛市签约，计划于2019年建成20多公里的云轨，也预示着“云轨”未来将服务更多的海外地区。与黑科技联姻未来，无人驾驶系统将是云轨的高科技主打配置。无人驾驶分为四个等级，而比亚迪的无人驾驶系统已经达到最高等级——全自动无人驾驶（UTO），可实现全自动运行，并且还具有安全追踪间隔最小、断电无人驾驶、自动诊断、休眠唤醒、客流实时监测、人脸识别等多项功能。每天清晨，云轨会自动“清醒”，在完成牵引、制动、车门、照明、电池、空调等多项检测之后，自动上线，随后自动运行，在完成既定工作后，自动“回家”、“休眠”。在车辆运行前、运行时，云轨会进行自我诊断，完成包括全系统的300多项检测。在极端温度条件下，该系统依旧能正常工作，既能适应-40℃的低温，也能经受80℃的高温挑战。王传福特别指出了云轨的一项功能，“在市电中断的情况下，云轨可自动切换成车载动力电池供电，并在无人驾驶模式下，驱动车辆安全运行至车站。”云轨无人驾驶，除了需要比亚迪的控制技术及定位技术之外，还离不开华为的eLTE通信技术，即4.5G轨道交通无线专网。如果说比亚迪云轨的无人驾驶系统是人脑的决策系统，那么华为4.5G轨道交通无线专网的作用是为云轨无人驾驶提供快速、高效的信息输送通道，两者默契配合才能让无人驾驶变得可控、安全。需要特别提及的是，云轨无人驾驶系统应用的4.5G轨道交通无线专网主要拥有三大亮点。首先，受益于4.5G技术的高可靠、低时延优势，结合A+B双网配置，eLTE为云轨无人驾驶系统提供了更可靠的通信网络，保障列车行进中的切换低时延和业务连续性，让云轨运行更可靠。其次，面对可能的干扰，eLTE有先进的抗干扰技术，辅之以端到端加密鉴权等算法，使得车地通信更安全、更稳定。另外，eLTE在覆盖能力、多用户接入能力以及QoS保障机制方面的优势，使得列车运行信号、PIS（Passenger Information System）和CCTV（Closed-Circuit Television）等多业务能一网承载，至简网络打造智能车地通信。华为一直秉持开放合作的原则，与比亚迪云轨各项应用、行业终端厂家进行了深度行业适配，打造多方共赢的新生态。谈及与伙伴的合作，王传福表示，“华为4.5G轨道无线专网代表了行业无线的发展趋势，契合了云轨发展的需要，更可靠、更高效、更智能。比亚迪始终坚持用技术创新满足人们对美好生活的向往，随着搭载无人驾驶系统的云轨在全球各地落地开花，更多的市民将可以乘坐云轨，获得便捷、智能、可靠的出行服务。”此外，王传福希望比亚迪参与到更多轨道交通业务的运营中，并促成全球供应链的协作，在拉近人与人之间物理的距离方面发挥更大作用。 | Three UK: From building capacity to sci-fi |
| 中国奶牛养殖产业正在向规模化、集约化、科技化方向发展。中国电信抓住机遇，以创新的牛联网产品“小牧童”切入奶牛养殖市场，受到了广泛关注，也带来良好的经济效益。中国奶牛行业现状中国奶牛养殖产业具有发展潜力大、能力差距大两个特点。从奶牛存栏量看：中国的奶牛养殖规模经过十余年的持续增长，目前已经基本稳定，2015年中国奶牛存栏量为1469万头，位居印度、欧盟（27 国）和巴西之后，近五年复合增长率为0.5%。从人均乳制品消耗量看：2016年，中国人均乳制品折合生鲜乳消费量为36.1千克，约为世界平均水平的三分之一，这与中国经济发展水平严重不符，也显示出中国乳制品消费需求的巨大潜力。从奶牛单产和养殖水平看：中国奶牛年单产约6吨左右，在世界处于中等水平。相比之下，印度是典型的以散养模式养殖的国家，奶牛年单产量最低，仅1.22吨；以美日韩为代表的国家以圈养为主，奶牛年单产量均超过9吨。中国100头以上奶牛牧场存栏比例为48%，而美国该比例超过80%。奶牛体征监控是规模化养殖的关键以中国广泛养殖的荷斯坦奶牛为例，其出生14个月后进入体成熟和性成熟期，可以进行第一次配种；经过280天孕期产子后，进入300天的产奶期；头胎牛在产后55天可以再次配种，二胎及二胎以上的牛产后50天可再次配种。奶牛每21天进入2天发情期，在此期间，可以对奶牛进行配种。然而对于每头奶牛而言，其个体生理周期具有差异性。奶牛场只有抓住奶牛的发情期成功配种，才能获取最大收益。综合考虑产奶量降低、产仔收益、牧场综合成本等因素，漏配一个发情期则每头奶牛损失效益约2000元。当前，奶牛场大多通过兽医人工检查的方式，包括直肠检查、行为观察、尾根喷漆等，监控奶牛的发情状况。但是，约65%的奶牛会在晚上9点至第二天凌晨4点发情，且不同奶牛发情表现规律不同，发情后最佳配种时间不固定，高产奶牛发情持续时间短，容易错过。因此，人工检查对奶牛发情检出率低于75%，且需要兽医值班巡查，劳动强度大，人力成本高。对于错过发情期的奶牛，部分奶牛场采取同期发情的手段，即给奶牛打激素针，三天后进行统一配种。这种方法的配种成功率比自然发情低9%，干扰奶牛生理周期，不仅因为激素残留降低牛奶品质，而且损害奶牛健康，多次注射后会导致奶牛抵抗力降低，寿命缩短。奶牛场要想提高规模化养殖的效益，就必须利用科技手段对奶牛进行体征监控。“智能牛项圈”应运而生，它能实时测量奶牛的运动状态等体征数据，通过小基站（读写器）收集所有牛项圈监测数据，再通过3G或4G方式上传至信息管理平台。小基站与牛项圈通过ZigBee等短距离通信方式传输数据。奶牛信息管理平台可对每头奶牛体征数据进行大数据建模，从而全面掌握奶牛的健康状况，比如判断奶牛是否生病及具体生理周期等。饲养员通过分析数据，可对奶牛进行科学喂养，及时治疗与配种。相比人工检查，智能项圈方案可以提高奶牛的发情检出率和受胎率，节约配种成本，避免激素的负作用。但是，这一方案也存在不少问题。安装复杂：现场需要安装小基站，并通过运营商网络回传，对人员技术水平要求高。故障率高：牧场环境恶劣、供电条件差、SIM卡欠费等因素，导致系统可靠性低。成本高企：中小牧场难以普及，大型牧场负担重。NB-IoT成就全能“小牧童”为了开拓畜牧行业市场，2017年2月起，中国电信联合华为和银川奥特，通过解决方案与商业模式创新，推出基于NB-IoT的牛联网产品“小牧童”，极大地改进了传统奶牛监控系统。技术方案“小牧童”将智能项圈中的通信方式，由ZigBee替换为NB-IoT技术，项圈数据可直接通过NB-IoT网络传输到中国电信物联网开放平台，然后进入部署在天翼云上的奶牛信息管理平台。奶牛场管理层、饲养员、兽医等通过网页或手机客户端，可以实时获取奶牛体征信息。作为中国电信集成的产品，“小牧童”由中国电信面向牧场进行销售与服务。因此，端到端的可靠性保障是规模商用的重点。功耗：因项圈需要终身佩戴，且奶牛场环境恶劣，终端要求IP65级防护，电池续航时间不能少于5年，项圈的MCU和传感器都采用低功耗产品。在奶牛体征监控场景中，数据需要3小时上报一次，上报频度远高于智能抄表一天一次的频率。增加电池，不仅增加成本，也增加了项圈重量，因此项圈对功耗的要求极为苛刻。在解决方案设计中，除了开启PSM等NB-IoT常规节电特性外，额外推动芯片、基站、核心网配合支持CDRX特性和RA特性。开启CDRX特性后，使得项圈终端续航时间从5年延长到6年。开启RA特性后，进一步延长到7年。拥塞：大型奶牛场的奶牛数量动辄一两万头，而项圈终端每天上报数据八次，因此多终端接入是非常常见的场景。在实验室测试中发现，多个终端同时上报业务，会导致基站底噪抬升，无法接入。在解决方案设计中，采用Backoff、Preamble参数优化等手段，提升了系统健壮性。终端侧也通过错峰机制，分散接入网络上传数据，更好地适配了NB-IoT网络的特性。“小牧童”当前已完成与中国电信物联网开放平台的对接，平台支持芯片固件升级与设备MCU软件升级、端到端快速故障定界、百万级并发亿级连接能力，这些都将保障产品的规模化发展。商业设计方案运营商要想在物联网领域获得更多收益，就不能只提供连接，还要提供连接管理平台和应用使能平台，同时引入合作伙伴的行业解决方案，即上层应用和终端，向行业客户提供端到端的解决方案，从而获取连接之上的溢价，并且提升客户粘性。通过与运营商合作，合作伙伴可以基于应用使能平台专注于行业应用开发，借助运营商覆盖全国的渠道快速获取用户，并且分享获得的收益。行业客户无需具备IT能力，也可享受到物联网业务带来的效能提升。“小牧童”产品的商业模式，就是按照上述模式来设计的，这使得中国电信的NB-IoT网络、销售渠道、客服能力等得到最大化应用，使其跨越卖管道、卖平台的阶段，直接卖服务，从行业旁观者成为主导者，销售收入比纯粹管道销售增加4-5倍，并且形成了中国电信自己的生态，为未来发展绿色食品溯源等各种新应用做好准备。市场进展与展望凭借良好的技术方案与商业模式设计，“小牧童”产品获得了市场的热烈追捧。2017年8月，中国电信宁夏分公司与宁夏上陵牧业股份有限公司签约5万套“小牧童”。9月，在中国电信集团副总经理陈忠岳的见证下，中国电信与内蒙古、山东、陕西、辽宁、宁夏等5省区牧业公司签约126万套“小牧童”。此外，该产品还得到了亚太、拉美等地运营商的广泛关注，正在积极交流试点。“小牧童”的应用不仅仅局限于奶牛养殖场。在家畜饲养行业，例如驴、马、羊、猪等，都有利用技术手段监控动物健康、生理周期、位置等信息的需求，从而科学地缩短胎间距，提升繁殖效率。到2020年，全球需要连接的动物，乐观估计将超过10亿。通过NB-IoT等ICT技术将动物连接起来，助力畜牧行业整体升级，实现科学饲养，不仅能提升行业效益，降低药物使用率，同时也将提高畜牧产品的品质，必将迎来更为广阔的发展前景。 | BYD has greatly expanded its commercial footprint since 1995, when it hit the tech scene as a battery producer for cell phones. Today, the Chinese company has emerged as a leader in new energy vehicles and photovoltaic energy storage technology as part of its “Four Green Dreams” strategy, covering solar power plants, battery storage power plants, electric cars, and rail transit.Given today’s ubiquitous traffic congestion, BYD believes the solution lies in 3D traffic networks that combine underground, ground, and air transport. This belief led to the genesis of its straddle monorail project, SkyRail. With five years of development under its belt, BYD Chairman and President Wang Chuanfu feels that SkyRail can forge the silver bullet that will stop urban congestion in its tracks and make transportation truly smart.Building cities on railsWang cites a past gridlock experience as his inspiration for SkyRail. On business in Beijing six years ago, a sudden rainstorm brought the entire city to a standstill – as a result, it took him four or five hours to get from Xizhimen to the airport. “That [traffic jam] left a particularly deep impression on me,” says Wang. The next week, he visited Tokyo and, despite more cars and fewer roads relative to Beijing, the traffic ran smoothly. On investigation, he observed that, “Tokyo is a city of railways, with 85 to 90 percent of the population opting for public transportation on weekdays.” In contrast, says Wang, “Cities on rails is the future [for China] because the popularization of cars and urbanization have overwhelmed urban roads.” The stats support his view: From 2012 to 2016, automobile production and sales in China rose from 19.3 million to 28 million vehicles per year, while the nation’s rapid urbanization will mean that 60 percent of the nation’s population ─ some 850 million people ─ will be living in cities by 2020 if current estimates pan out.According to Wang, SkyRail will mainly meet the needs of second- and third-tier cities, “The number of cars in these cities is increasing by 15 percent per annum, but the number of roads is growing at just 1 percent,” he says. “As people’s standard of living improves, buying a car has become a must-have and so congestion is inevitable. The solution is public transportation.”Investing 5 billion yuan to unlock a one trillion-yuan doorBYD formally entered the trillion-yuan rail transit industry with a 5 billion yuan investment in SkyRail tech R&D in 2012, and the company fully owns the IPR for the SkyRail monorail system. The most obvious advantage of SkyRail is that it’s relatively cheap, so small- and medium-sized cities can benefit in a way that extremely expensive subway construction doesn’t allow. According to Wang, “Building a 1-kilometer length of subway costs 1 billion yuan, compared with 200 million yuan for the same length of SkyRail, just one-fifth of the cost, and the construction time is up to 75 percent faster.” He mentions that there are 273 prefecture-level cities like Shantou in China. “It’s not feasible to build metro systems in medium-sized cities such as these,” he says. “But, multiplying 273 by 40 billion yuan gives you a market size of over 1-trillion yuan.” As a straddle monorail, SkyRail covers a small area, has a good ability to climb and a small turning circle, and can hit speeds of up to 80 km/h.Wang is crystal clear about SkyRail’s market positioning. He believes that subways and high-speed railways are high-capacity traffic systems, whereas SkyRail is a medium-capacity system that’s a seamless fit for medium-sized cities and the suburbs of large cities. “SkyRail can be integrated with existing public transport systems to create three-dimensional transport networks consisting of underground, surface and air transportation,” says Wang. “In the transit systems of first- and second-tier cities, SkyRail can be widely used for feeder lines and new lines, and as main trunk lines in third- and fourth-tier cities, as well as for sightseeing lines for tourist attractions.”SkyRail blooms at Yinchuan Flower ExpoOn September 1, 2017, the first SkyRail line went into commercial operation at the Flower Expo in Yinchuan, marking the city’s first ever rail transit system and giving SkyRail users the best view of the sea of flowers on show. Around 40,000 people were estimated to have used the system on launch day, rising to more than 60,000 more each day on September 2 and 3 ─ the peak first weekend of the expo. As a tourist carrier, SkyRail’s speed in this scenario was limited to a sedate and barely audible 25 km/h.“The project got underway on April 18 and by August 31, the railway was officially up and running,” explains Wang, describing just how fast the project got off the ground. “In just over four months, work on infrastructure construction, steel column hoisting, track girder installation, mechanical and electrical communications equipment, and battery storage power station was completed.” Neither the rapid turnaround nor the heavy initial use affected quality, however. “Because the number of people visiting the garden exceeded our expectations, we launched a plan to run a backup SkyRail,” says Wang. “All seven of the SkyRail trains ran at full capacity with zero safety faults or passenger complaints, and on-time rates exceeded 99 percent. It went almost perfectly.”Each SkyRail car is equipped with high-speed wireless broadband services, so passengers can easily share photos and videos. Based on real-time passenger flow monitoring technology, announcements about congested areas are played on platforms and in cabins in real-time, so passengers can plan their routes.Since the launch of SkyRail, BYD has signed contracts with over a dozen cities, including Shantou, Shenzhen, Bengbu, and Guilin, as well as Yinchuan. On August 22, 2017, the company also signed a contract with Iloilo City in the Philippines to build a SkyRail of over 20 kilometers in 2019, an indication that SkyRail will be rolled out in more overseas regions in the future.The fast track to autonomyIn the future, SkyRail will adopt a high-tech driverless system, with BYD tech providing the highest level of automation out of the four possible for rail systems. Unattended train operation (UTO) delivers full automation, enabling the shortest safe train headway, automated diagnosis, automated sleep and wake-up capabilities, real-time passenger flow monitoring, facial recognition, and full automation during power failures. “In the event of a mains failure, SkyRail can automatically switch to an onboard battery and drive safely to the next station in driverless mode,” says Wang.Each morning, SkyRail trains can automatically wake up and enter the network after carrying out traction, braking, doors, lighting, batteries, and air conditioning tests. They’re then able to operate automatically and, after completing their set schedules, automatically return home and sleep. Before and during operation, SkyRail trains carry out self-diagnostics comprising more than 300 tests on their entire system. The system also works perfectly well in extreme temperatures, able to adapt to lows of -40 °C and withstand highs of up to 80 °C.As well as BYD’s control and positioning technology, SkyRail uses Huawei’s eLTE communications technology in the shape of its 4.5G rail wireless network, which acts as a channel for the fast and efficient transmission of information. The Huawei solution has three important advantages: First, thanks to 4.5G’s high reliability, low latency, and A+B dual-network configuration, eLTE provides a more reliable communication network for SkyRail’s driverless systems ensure low-latency service handover and service continuity when the trains are moving, which increases SkyRail’s reliability.Second, eLTE’s advanced anti-interference technology can handle interference by virtue of end-to-end encryption and authentication algorithms, making car-ground communication more secure and stable.Third, eLTE’s advantages in coverage capabilities, multi-user access capabilities, and QoS guarantees mean multiple services like railway signaling, passenger information systems, and closed-circuit television can be carried over a single network, enabling simple and smart car-to-ground communication over the network. According to Wang, “Huawei’s 4.5G wireless network for railways meets SkyRail’s requirements for reliability, efficiency, and intelligence.”Already off to a great start, BYD hopes to play a greater role in narrowing the physical distance between people by expanding its operations on a global scale and building a strong collaborative ecosystem. |
| 中国奶牛养殖产业正在向规模化、集约化、科技化方向发展。中国电信抓住机遇，以创新的牛联网产品“小牧童”切入奶牛养殖市场，受到了广泛关注，也带来良好的经济效益。中国奶牛行业现状中国奶牛养殖产业具有发展潜力大、能力差距大两个特点。从奶牛存栏量看：中国的奶牛养殖规模经过十余年的持续增长，目前已经基本稳定，2015年中国奶牛存栏量为1469万头，位居印度、欧盟（27 国）和巴西之后，近五年复合增长率为0.5%。从人均乳制品消耗量看：2016年，中国人均乳制品折合生鲜乳消费量为36.1千克，约为世界平均水平的三分之一，这与中国经济发展水平严重不符，也显示出中国乳制品消费需求的巨大潜力。从奶牛单产和养殖水平看：中国奶牛年单产约6吨左右，在世界处于中等水平。相比之下，印度是典型的以散养模式养殖的国家，奶牛年单产量最低，仅1.22吨；以美日韩为代表的国家以圈养为主，奶牛年单产量均超过9吨。中国100头以上奶牛牧场存栏比例为48%，而美国该比例超过80%。奶牛体征监控是规模化养殖的关键以中国广泛养殖的荷斯坦奶牛为例，其出生14个月后进入体成熟和性成熟期，可以进行第一次配种；经过280天孕期产子后，进入300天的产奶期；头胎牛在产后55天可以再次配种，二胎及二胎以上的牛产后50天可再次配种。奶牛每21天进入2天发情期，在此期间，可以对奶牛进行配种。然而对于每头奶牛而言，其个体生理周期具有差异性。奶牛场只有抓住奶牛的发情期成功配种，才能获取最大收益。综合考虑产奶量降低、产仔收益、牧场综合成本等因素，漏配一个发情期则每头奶牛损失效益约2000元。当前，奶牛场大多通过兽医人工检查的方式，包括直肠检查、行为观察、尾根喷漆等，监控奶牛的发情状况。但是，约65%的奶牛会在晚上9点至第二天凌晨4点发情，且不同奶牛发情表现规律不同，发情后最佳配种时间不固定，高产奶牛发情持续时间短，容易错过。因此，人工检查对奶牛发情检出率低于75%，且需要兽医值班巡查，劳动强度大，人力成本高。对于错过发情期的奶牛，部分奶牛场采取同期发情的手段，即给奶牛打激素针，三天后进行统一配种。这种方法的配种成功率比自然发情低9%，干扰奶牛生理周期，不仅因为激素残留降低牛奶品质，而且损害奶牛健康，多次注射后会导致奶牛抵抗力降低，寿命缩短。奶牛场要想提高规模化养殖的效益，就必须利用科技手段对奶牛进行体征监控。“智能牛项圈”应运而生，它能实时测量奶牛的运动状态等体征数据，通过小基站（读写器）收集所有牛项圈监测数据，再通过3G或4G方式上传至信息管理平台。小基站与牛项圈通过ZigBee等短距离通信方式传输数据。奶牛信息管理平台可对每头奶牛体征数据进行大数据建模，从而全面掌握奶牛的健康状况，比如判断奶牛是否生病及具体生理周期等。饲养员通过分析数据，可对奶牛进行科学喂养，及时治疗与配种。相比人工检查，智能项圈方案可以提高奶牛的发情检出率和受胎率，节约配种成本，避免激素的负作用。但是，这一方案也存在不少问题。安装复杂：现场需要安装小基站，并通过运营商网络回传，对人员技术水平要求高。故障率高：牧场环境恶劣、供电条件差、SIM卡欠费等因素，导致系统可靠性低。成本高企：中小牧场难以普及，大型牧场负担重。NB-IoT成就全能“小牧童”为了开拓畜牧行业市场，2017年2月起，中国电信联合华为和银川奥特，通过解决方案与商业模式创新，推出基于NB-IoT的牛联网产品“小牧童”，极大地改进了传统奶牛监控系统。技术方案“小牧童”将智能项圈中的通信方式，由ZigBee替换为NB-IoT技术，项圈数据可直接通过NB-IoT网络传输到中国电信物联网开放平台，然后进入部署在天翼云上的奶牛信息管理平台。奶牛场管理层、饲养员、兽医等通过网页或手机客户端，可以实时获取奶牛体征信息。作为中国电信集成的产品，“小牧童”由中国电信面向牧场进行销售与服务。因此，端到端的可靠性保障是规模商用的重点。功耗：因项圈需要终身佩戴，且奶牛场环境恶劣，终端要求IP65级防护，电池续航时间不能少于5年，项圈的MCU和传感器都采用低功耗产品。在奶牛体征监控场景中，数据需要3小时上报一次，上报频度远高于智能抄表一天一次的频率。增加电池，不仅增加成本，也增加了项圈重量，因此项圈对功耗的要求极为苛刻。在解决方案设计中，除了开启PSM等NB-IoT常规节电特性外，额外推动芯片、基站、核心网配合支持CDRX特性和RA特性。开启CDRX特性后，使得项圈终端续航时间从5年延长到6年。开启RA特性后，进一步延长到7年。拥塞：大型奶牛场的奶牛数量动辄一两万头，而项圈终端每天上报数据八次，因此多终端接入是非常常见的场景。在实验室测试中发现，多个终端同时上报业务，会导致基站底噪抬升，无法接入。在解决方案设计中，采用Backoff、Preamble参数优化等手段，提升了系统健壮性。终端侧也通过错峰机制，分散接入网络上传数据，更好地适配了NB-IoT网络的特性。“小牧童”当前已完成与中国电信物联网开放平台的对接，平台支持芯片固件升级与设备MCU软件升级、端到端快速故障定界、百万级并发亿级连接能力，这些都将保障产品的规模化发展。商业设计方案运营商要想在物联网领域获得更多收益，就不能只提供连接，还要提供连接管理平台和应用使能平台，同时引入合作伙伴的行业解决方案，即上层应用和终端，向行业客户提供端到端的解决方案，从而获取连接之上的溢价，并且提升客户粘性。通过与运营商合作，合作伙伴可以基于应用使能平台专注于行业应用开发，借助运营商覆盖全国的渠道快速获取用户，并且分享获得的收益。行业客户无需具备IT能力，也可享受到物联网业务带来的效能提升。“小牧童”产品的商业模式，就是按照上述模式来设计的，这使得中国电信的NB-IoT网络、销售渠道、客服能力等得到最大化应用，使其跨越卖管道、卖平台的阶段，直接卖服务，从行业旁观者成为主导者，销售收入比纯粹管道销售增加4-5倍，并且形成了中国电信自己的生态，为未来发展绿色食品溯源等各种新应用做好准备。市场进展与展望凭借良好的技术方案与商业模式设计，“小牧童”产品获得了市场的热烈追捧。2017年8月，中国电信宁夏分公司与宁夏上陵牧业股份有限公司签约5万套“小牧童”。9月，在中国电信集团副总经理陈忠岳的见证下，中国电信与内蒙古、山东、陕西、辽宁、宁夏等5省区牧业公司签约126万套“小牧童”。此外，该产品还得到了亚太、拉美等地运营商的广泛关注，正在积极交流试点。“小牧童”的应用不仅仅局限于奶牛养殖场。在家畜饲养行业，例如驴、马、羊、猪等，都有利用技术手段监控动物健康、生理周期、位置等信息的需求，从而科学地缩短胎间距，提升繁殖效率。到2020年，全球需要连接的动物，乐观估计将超过10亿。通过NB-IoT等ICT技术将动物连接起来，助力畜牧行业整体升级，实现科学饲养，不仅能提升行业效益，降低药物使用率，同时也将提高畜牧产品的品质，必将迎来更为广阔的发展前景。 | Three UK: From building capacity to sci-fi |
| 潍坊坐落在山东半岛中部，是风筝的故乡。史书记载，2000多年前春秋时期的墨子在潍坊做出了人类历史上第一个风筝，传说最初是用来传递信息的。如今，借助物联网时代的东风，昔日的风筝之乡在智慧城市建设的广阔天地中，飞出崭新的高度。潍坊市总面积1.61万平方公里，常住人口约930万，2016年经济总量位列全国地级市第32位。为提高城市管理水平，普惠民生，实施信息化领先发展和带动战略，创建面向未来的新型智慧城市，潍坊于2014年成立智慧城市办公室，深入推进智慧潍坊的建设。手机里的城市通行证随着移动互联网的蓬勃发展，人们的生活与移动APP日渐密不可分。潍坊也不失时机，推出智慧城市云服务平台“潍V”APP，将潍坊的教育、医疗、交通、旅游、行政审批等公共资源整合进去，为潍坊人打造了一个指尖上的智慧城市。基于微信、支付宝等平台的移动支付在中国日渐普及，潍坊更进一步，自主开发出互联网金融服务平台“云支付”，聚焦本地的医疗、教育、公共事业、政务服务等非税收入领域，通过“潍V”APP为市民提供广域、精细、泛在的移动支付服务。借助云支付，合作银行正在平台上布局面向市民的“快贷”和面向本地电商用户的供应链金融服务，这可以说是对普惠金融的一个创新实践。借助潍坊创新研发的“互联网+实名认证”系统和“云支付”系统，潍坊创新打造了“V派”智慧城市通行证。它以手机APP方式集成居民身份证、驾照、医保卡以及银行卡、公交卡、自行车卡、门禁卡、图书借阅卡、旅游一卡通等各类IC卡，市民办事、出行一个APP全部搞定，还支持各种公共服务的移动支付，让市民畅享“一机在手、通行全城”的便利生活。潍坊是继深圳、杭州之后全国第三个实现医保卡手机支付的城市，更是国内首个实行电子身份证的城市。据此，潍坊市发起“三无联盟”，倡导“无卡、无证、无现金”的智慧城市品质生活。目前，“V派”已经在潍坊市市县两级政务服务中心、阳光大厦、市级综合办公大楼、市中医院、社保联网药店、部分酒店、商超进行试运行，并在部分县市区启动推广。“V派”与潍坊中百集团合作建设的全省首个无人售货超市也行将在谷德广场落成。目前，“V派”已有活跃用户突破100万人。作为新一代城市通行证，“V派”以其“全维度场景覆盖”和“全虚拟化便捷携带”的特点，可完美取代当前各城市的“市民一卡通”，推广价值巨大。物联网助力智慧城市3.0潍坊的智慧城市建设起步就是“潍V”，直接绕过了PC互联，抓住的是移动互联网第一波浪潮。PC互联时代的智慧城市特点就是一个个网站应用，其便利性与移动APP相比无疑是霄壤之别。如果把PC互联时代的智慧城市定义为“智慧城市1.0”，移动互联时代称作“智慧城市2.0”，那么，潍坊可以自豪地宣称，我们已经迈出了“智慧城市3.0”的第一步。2016年10月，潍坊率先使用华为NB-IoT技术，建设城区智慧照明系统。2016年6月，华为主导的NB-IoT窄带物联标准被3GPP确认为新一代物联技术标准。仅仅4个月后，潍坊人就发挥老祖宗墨子的创新精神，敢为人先，把NB-IoT技术应用在了路灯的照明控制上。2016年11月，潍坊市政府与华为签订《潍坊市城市物联网应用和产业基地建设战略合作协议》，并举行了“华为（潍坊）物联网应用创新中心”揭牌仪式，华为将依托“华为-潍坊”物联网产业联盟，建设物联网产业园区，与潍坊共同努力，打造全国首个窄带物联示范城市。截至2017年12月，按照“一网一平台N应用”的建设思路，潍坊全境的NB-IoT网络已完成布设，全市已建设1600多个NB-IoT基站，网络覆盖率超过94%。同时，基于华为OceanConnect物联网平台打造的首个城市级物联网公共服务平台已完成部署，以智慧泊车、智慧市政、车联网、智慧楼宇、智慧照明为代表的十二类物联城市应用陆续启动。智慧潍坊3.0的轮廓已然清晰。潍坊物联网平台的定位是“立足潍坊、服务全省”的城市级公共服务平台，聚合行业物联网应用，解决城市物联网应用出现的“碎片化”难题，同时归集鲜活度高、价值度高的城市级物联大数据，并通过平台化支撑，为各类应用的开发节省大量费用。平台通过设备连接方式整合和物联网数据整合两个关键能力，实现物联网数据的统一管理，跨部门、跨应用共享并统一呈现，在使能物联网应用系统的同时，为综合管理平台提供决策依据支撑。华为（潍坊）物联网应用创新研发中心正在施工建设中，其中物联网开放实验室具体承担“物联潍坊”建设产品和方案的验证及测试，物联网展厅重点展示华为及合作伙伴创新应用成果。依托该中心，我们将拓展与国内外院校、研究机构间的合作；扶持本地企业在物联网技术方面的能力提升以及业务拓展；争取国家、省级物联网项目课题研究，推动“物联潍坊”标准上升为国家标准。同时，潍坊物联网产业园区即将动工，我们将依托华为的品牌资源和优质高效的云服务软环境，结合物联潍坊建设，培育双创氛围，形成生产性企业与研究性企业在潍坊的双集聚，打造具有广泛影响力的物联网产业示范园区。华为-潍坊智慧城市物联网产业联盟已汇聚国内外物联网领域优质合作伙伴52家，覆盖城市交通、城市照明、市政管理与服务、环境生态保护、精细化农业、工业制造、仓储物流等领域。昌乐县作为“物联潍坊”的试点县市区，按照全市的发展思路，基于“物联潍坊”公共服务平台，协调了39个部门和17个企事业单位，推进NB-IoT提升智慧城市应用工作的研究，并正在落地智慧市政、智慧停车、智慧路灯、智慧管线等18类物联网应用。PC互联网解决的是信息对称问题，移动互联网解决的是效率对接问题，而物联网解决的是万物互联问题，这才应该是智慧城市的“智慧”所在。物联城市就是“智慧城市3.0”，具体逻辑是在物联网的新维度下，重新建构智慧城市，通过人与人、人与物、物与物等城市单元的“万物互联”，完善城市的感知神经系统，进而激活城市大脑，让城市真正智慧起来。值得一提的是，在物联潍坊的启动过程中，泰华智慧公司加入进来，通过与华为达成战略合作，成为物联潍坊建设的紧密伙伴。山东省水利厅也慧眼独具，依托潍坊的物联网平台，合作建设全省的智慧河长管理系统。物联网改写了智慧城市的内涵，在开启智慧城市新维度的同时，也在刷新着我们的视野，检验着我们的境界。 | Three UK: From building capacity to sci-fi |
| 德国电信公司（DT）立志成为欧洲领先的电信巨头，数字化是关键的发展战略。2016年，德国电信加大对网络的投资，使其年收入同比增长5.6%，达到731亿欧元。首席技术官Bruno Jacobfeuerborn介绍了德国电信如何利用数字化转型，发展视频业务，推进其网络战略。主动出击视频内容《营赢》：内容和视频正在重新定义电信行业，德国电信如何将视频策略从被动化为主动？Bruno Jacobfeuerborn：我们聚合视频内容，把客户所有想要观看的内容整合为一个服务包，放在电视直播或其他内容平台上。我们在德国和欧洲都是这么做的。这也是德国电信的核心主张之一。我们决定使用华为的视频平台来满足客户的需求，即随时随地在任何屏幕上观看标清、高清和4K超高清视频。德国电信将提供不限流量的流媒体业务，并且不会降低客户资费套餐内的高速数据流量。客户不必担心限流，就可以自由地在线收听音乐、收看电影和电视节目。他们不再为了担心数据流量用尽，而费心寻找WiFi热点。我们还推出了移动流媒体电视业务，为智能手机和平板电脑提供大约40个频道，其中包括德国主要的公共和商业频道。每个用户都可以在Entertain TV Mobil上注册最多4台设备，包括通过网站门户访问该服务的台式机和笔记本电脑。我们还利用机器学习和云，优化端到端的服务。终端用户仅凭一个账号和一次付款就能够单点访问内容。网络迁移循序渐进《营赢》：德国电信将如何利用其丰富的固定网络资源，提供无缝的用户体验，特别是在铜线网络方面？Jacobfeuerborn：我们以融合网络战略为基础，这是现代固定网络和移动IP网络的智能组合。因此，随着视频服务对带宽的需求与日俱增，我们决定采用Vectoring和SuperVector技术，提供100 Mbit/s和250 Mbit/s的传输速度，甚至实现速度高达500到700 Mbit/s的G.fast。如果部署FTTB（光纤到楼）业务，我们将会在大楼的G.fast盒子中安装光纤，随后辅以同轴电缆或普通电话线，客户的网速将会超过200 Mbit/s。这样的绑定技术结合了固定线路和移动功能，可以提供更高速的网络，完全可以满足大多数客户对带宽的需求。《营赢》：德国电信计划如何利用FTTH技术更好地接触消费者，并提高投资回报率？Jacobfeuerborn：我们的策略是将光纤网络接入家庭。从Vectoring开始，我们还会逐步部署SuperVector、G.fast以及FTTH（光纤到户）。我们正在将德国带入高速时代。德国电信的目标是2018年前，为80%的德国家庭提供不低于50 Mbit/s的网络服务。今天，我们已经有了混合路由器，可以最大限度地平衡固定和移动网络。下一代的低时延综合5G网络，就是开创欧洲数字化未来的高带宽解决方案。我们将按照明确的计划，稳步迈进Gigabit时代。《营赢》：德国电信如何利用固定和移动网络之间的协同作用，提高市场份额？Jacobfeuerborn：我们为大部分市场提供固定和移动网络双重服务，并且采用固定移动融合策略。同时，我们通过Magenta One将四网融合业务推广到其它欧洲市场。德国电信于2014年9月，首次在德国推出MagentaEINS，将移动服务与固定语音、宽带和电视业务相结合，提供小型、中型和大型服务选择。德国电信拥有的2200万固定网络连接和4000万移动客户，已经彰显了其作为综合电信供应商的巨大潜力。《营赢》：您如何看待云在实现更高效率方面的作用？Jacobfeuerborn：德国电信的战略目标是成为“欧洲领先的电信巨头”。到2018年，我们计划投资超过60亿欧元拓展欧洲的网络，完成客户网络向全IP化的迁移，并跨境提供更多云化产品。为了实现这一计划，我们与华为合作，在每个国家都设有不同的平台。我们希望以泛欧洲的方式将一切都纳入同一个云端。 | Deutsche Telekom (DT) has the clear ambition to be a leading European telco, with digitalization a key part of its strategy. In 2016, DT increased its revenue by 5.6 percent year-on-year to reach €73.1 billion based on high investment in its networks. DT CTO Bruno Jacobfeuerborn explained how the German operator is ramping up its network strategy during digital transformation. Ambitious content aggregatorWinWin: As content and video are redefining the telecom industry, how can DT shift its video strategy from reactive to proactive? Bruno Jacobfeuerborn: We are following a video content aggregator approach. We offer our customers whatever they want in one package on linear TV or other content platforms. We do it in Germany, and Europe as well. It’s one of our key propositions. We decided to use Huawei's video platform to fulfill consumer demand to experience SD, HD, and 4K UHD video on any screen, anytime, anywhere.Deutsche Telekom will offer unlimited mobile streaming services without reducing the high-speed data volume included in their tariffs. Customers can stream movies, TV shows, sports or music without worrying that data throttling will kick in. They don’t have to look for the next Wi-Fi hotspot to prevent their data allowance from being used up. We’ve also launched a mobile TV streaming service offering around 40 channels for smartphones and tablets, which includes all major German public and commercial channels. Each user can register up to four devices for Entertain TV Mobil, including desktops and laptops accessing the service through a web browser interface. To optimize our service quality from end to end, we use machine learning and cloud services. End users can have a single point of content entry with one account and a single payment.Well-paced network migrationWinWin: How will DT use its rich fixed network resources to deliver a seamless user experience, especially on copper networks?Jacobfeuerborn: The foundation is our Integrated Network Strategy, which is an intelligent combination of modern fixed and mobile IP networks. So, as video services are really increasing demand for bandwidth, we decided to adopt vectoring and super vectoring to bring us 100 Mbps and 250 Mbps and G.fast to give speeds of 500 to 700 Mbps. If we roll out fiber to the building (FTTB), we will install fibers in the G.fast box in cellars, which we’ll then serve with coaxial cables or normal telephone lines. Customers will get more than 200 Mbps. Bonding technology combines fixed line and mobile capabilities to get even higher speed services. With such high speeds, I think we can fulfill 99.9 percent of requests from most customers. WinWin: What is Deutsche Telekom’s plan for utilizing FTTH technology to better engage with consumers and boost ROI?Jacobfeuerborn: Our strategy is to bring fiber close to the home. We started with vectoring. Then we’ll deploy super vectoring and G.fast, and later FTTH. We are rapidly bringing Germany into the high-speed age. DT has set itself the goal of providing up to 80 percent of households in Germany with a minimum 50 Mbps by 2018. Today, we already have hybrid routers that leverage the best of our fixed and mobile networks.. Our next-generation, low-latency, integrated 5G network is a high-bandwidth answer to opening up the digital future in Europe. We have a clear timetable on the way to a gigabit society.WinWin: How will DT leverage the synergy between fixed and mobile networks to raise its market share?Jacobfeuerborn: We offer both fixed and mobile services in most of our markets and have adopted an FMC strategy. We’re extending our quad-play strategy to many European markets through Magenta One, which was first launched as MagentaEINS in Germany in September 2014. It combines mobile services with fixed voice, broadband, and TV offerings, with small, medium, and large options available. Our 22 million fixed network connections and 40 million mobile customers have demonstrated the market potential for Deutsche Telekom as an integrated telecommunications provider.All-IP and one cloudWinWin: How do you see the role of cloud in making your business more efficient?Jacobfeuerborn: Deutsche Telekom is pursuing a strategy to become what we describe as "the leading telco in Europe". We plan to invest more than €6 billion in the expansion of our European networks by 2018, complete the migration of customer lines to all-IP and offer more cloud-based products across borders. We’re working with Huawei on the way to do that, as we have different platforms in each country. We plan to bring everything into one cloud based on a pan-European approach. |
| 智能联接：融合5G、人工智能和物联网 | Intelligent connectivity: The fusion of 5G, AI, and IoT |
| 金融业正在发生不可逆转的变化：今天的消费者精通技术，更青睐费率低、透明度高、移动端快捷易用的金融服务；传统银行面临互联网金融的挑战，竞争优势和市场份额不断流失。在此背景下，汇丰银行积极拥抱数字化浪潮，应对金融科技企业的竞争。汇丰银行首席架构师David Knott向我们介绍了汇丰银行的愿景。传统银行与金融科技企业的竞合关系自1998年Paypal创立以来，金融科技服务发展相当缓慢，直到几年前才进入快速增长期。今天，Apple Pay、Android Pay、财付通、支付宝等众多金融服务加入竞争，对消费者和小型企业消费理财方式产生了颠覆性的影响。在贷款难问题普遍存在、个人贷款风险过高的情况下，各类金融科技服务应运而生：从P2P电子货币转帐，到整合各企业网站的统一支付平台，不一而足。其中，全球最大的网络信贷平台Lending Club 2016年向消费者和小型企业发放贷款高达84亿美元；P2P资产管理企业Betterment最新估值达7亿美元，比一年前的4.5亿美元几乎翻了一番。许多传统银行注意到金融科技的崛起，纷纷呼吁加大该行业的监管力度。那么，传统银行与金融科技企业之间是什么关系呢？汇丰银行首席架构师David Knott表示：“汇丰欢迎金融科技企业加入竞争，但汇丰更愿意把金融科技企业视为潜在合作伙伴，而不是竞争对手。”2017年3月，汇丰银行宣布与全球最大的在线贸易平台Tradeshift建立伙伴关系。David Knott解释说，金融科技企业能够给市场带来令人振奋的新技术，为客户打造更有吸引力的金融服务产品。David Knott认为：“一直以来，银行都是传统大型科技企业的客户，但过去几年来，科技市场已经发生天翻地覆的变化，几乎每天都有新的科技企业诞生，因此也 给汇丰带来了大量的合作机遇。”David Knott表示，在业务层面，汇丰与众多伙伴和客户建立了合作关系，“汇丰擅于和其他企业打交道，探索互惠共赢的合作方式”，而在技术层面，David Knott指出新的技术合作模式不断涌现，汇丰将基于其目标选择最佳的合作方式。“技术合作模式丰富多样，比如说利润共享、知识产权共享等等。汇丰既可以作为顾客直接购买许可、产品和服务，也可以担任技术投资工具的角色。”David Knott采取了非常务实的立场，认为有时候汇丰适合当顾客，但有时候汇丰更适合作为投资者，探索金融科 技企业的运作方式，助力金融科技企业取得成功。拥抱数字化浪潮在数字化时代，支付方式和数字化系统都将迎来快速变革。麦肯锡指出，银行必须在三至五年内掌握数字技术，才能在市场竞争中生存下来。汇丰从很早就开始拥抱数字技术，有能力快速应对市场变化。David Knott介绍说，“汇丰的做法是把业务团队和技术团队分成小规模的数字技术团队，充分授权，在环境、技能等方面提供充分保障，帮助他们取得成功。”谈及科技对银行业的影响，David Knott非常兴奋：“云技术既可以让新技术的使用变得更加便捷，也可以实现大规模、可弹性扩展的服务。机器学习技术可以令数据发挥作用，优化业务决策算法。”他认为人工智能将给银行业带来巨大影响：“人工智能将渗透所有银行业务，无论是咨询、检测匿名交易，还是协助处理正常交易。”安全问题攸关个人和企业金融服务的成败，David Knott认为生物识别技术有助加强安全：“生物识别技术可以对人体特征进行数字化，并以数字方式进行存储，实现无缝、简易、安全的身份识别功能。”开发移动端，敏捷响应客户需求数字商业平台Avoka发布的《2017年银行业数字行销年度报告》指出，超过半数银行的个人银行业务大多无法通过网络申办。报告认为大多数银行在数字营销和数字渠道上的投资没有发挥应有的效果。消费者开立在线账户时，高达70%至90%的消费者中途退出。与大多数银行相比，汇丰银行拥有完善的在线和移动客户服务。David Knott介绍：“移动应用将对我们的基础设施产生深远的影响。因为有了移动应用，人们不必到营业网点就能办理业务。”David Knott表示消费者的行为也发生了变化。“几十年前，客户每月会从信箱取出银行账单；现在客户可以一天多次检查自己的资金状况。因此，我们必须确保移动应用能够快速作出响应，后端也要进行相应调试，确保响应速度能够满足客户需求。”快速响应客户需求、为客户提供便利是汇丰的经营理念之一。汇丰与初创企业Pariti共同开发推出的SmartSave应用能够帮助客户无需考虑就能完成存钱任务。例如，客户可以设置购物找零金额自动转存规则，比方说购物金额为9.66英镑，取整数为10英镑，找零金额34便士就会自动进入客户的储蓄账户。David Knott说，为了实现这类功能，“我们可以使用数据缓存、在API中加入节流限制等方法确保系统的弹性和全栈性能。”展望未来David Knott对未来十年银行业的发展表示乐观，他认为银行服务的便捷性将进一步提高，消费者对自己的财务状况将拥有更大控制权。“客户可以使用研究工具自己做出理财决策。加深对他人选择的了解后，客户可以依此做出更加明智的决策。”David Knott认识到客户并不想每天都与银行直接打交道。“购买服务和产品的付款操作将无缝融入我们的日常生活当中，我们可以使用智能传感器、物联网、5G等技术实现这一目标。”银行也逐渐认识到，如今开展跨行业合作可以带来更显著的成效。David Knott表示，汇丰银行与传统IT企业继续合作的同时，还会与众多小型企业开展合作。“我们必须找到恰当的合作方式，以免小型企业合作伙伴为我们繁复的流程所拖累。”除了与企业合作，David Knott还提到需要与其他类型的伙伴加强合作。David Knott负责汇丰的创新实验室工作，“我们通过创新实验室与全球学术和研究机构建立了伙伴关系。例如，英国的阿兰·图灵研究所的重点研究领域是数据和机器学习，我们与图灵研究所也开展了数据相关的合作。”汇丰希望能利用其丰富的数据资源产生商业和社会价值。“我们还与香港应用科技研究院在生物特征、大数据、区块链和其他数据分析领域开展合作。”根据David Knott的构想，未来的汇丰远远不只是一家传统银行，数据和合作伙伴在未来的战略中占据了核心位置。“在我们未来的发展道路上，将进一步加强与学术界的合作，构建更加丰富多元的生态体系。” | The world of finance has changed irrevocably. Tech-savvy customers are hungry for lower fees, greater transparency, and fast and easy mobile interfaces, and traditional banks are losing competitiveness and market share to OTT players. HSBC, however, is embracing digitalization and the nascent competition from Fintech startups. HSBC’s Chief Architect David Knott outlines the banking giant’s vision.Coopetition with FintechBeginning perhaps with the founding of PayPal in 1998, the rise of Fintech companies and services was fairly gradual until a few years ago. Then it skyrocketed. Now, Apple Pay, Android Pay, Tencent, Alipay, and Ant Pay, are disrupting how consumers and small businesses interact with their finances.These disruptions, from simple P2P e-money transfers to infrastructure projects that integrate payment platforms on company websites, come at a time when mortgages are out of reach for many and personal loans are risky.Lending Club, the world’s largest online credit marketplace, issued US$8.4 billion in loans to consumers and small businesses last year. In the P2P asset management space, Betterment was recently valued at US$700 million – nearly doubling in value from US$450 million just a year before.Banks are taking notice. Many major players in the finance world are calling for increased regulation of the Fintech world. The question is then, what exactly is the relationship between banks and Fintech companies? According to Knott, “We welcome competition from Fintechs. But we’d rather see them as potential partners than competitors.” In March, for example, HSBC announced its partnership with the Fintech startup Tradeshift, the world’s largest commercial business platform. Knott explains that Fintechs are bringing exciting tech to the market, which can provide a compelling offering for financial services customers, “For many years, banks have traditionally been customers of big traditional technology companies,” he says. “However, the market for technologies has been shaken up massively in the last few years. There are new entrants literally every day. I see a lot of partnership opportunities.”Knott states that on the business side, HSBC operates a large network of partners and customers, “We’re very experienced at building relationships with companies and figuring out how our businesses mutually benefit each other.” On the technology front, he points out that new tech models are emerging. HSBC selects its approach based on desired outcomes, “There are a whole range of models like revenue sharing and IP sharing,” states Knott. “We can be a straight customer…buying licenses, products and services. But we can also run a technology investment vehicle ourselves.” His view is pragmatic, noting that sometimes the right thing to do is be a customer, while at others it’s better to be an investor, finding out how Fintech companies operate and helping them succeed.It’s all about digitalThe new digital epoch includes rapid innovation in payments and the broader transformation of systems enabled by digital tech. The need to act quickly is acute: According to McKinsey, banks have three to five years to become digitally proficient if they wish to survive.HSBC is an early adopter and quick to move. Knott explains that, “We’ve organized our business teams and technology teams into smaller teams, [with] highly empowered people working on new technologies with all the environment, skills, and capabilities they need to get stuff done.”Knott is excited about the impact technology is having on the banking space, “Cloud provides us with a way to both consume new technologies easily and provide massive and elastic scale,” he says. “Machine learning [lets you] put data to work to train algorithms to make decisions within your business.” He’s clear that AI will have huge influence on the sector and become “deeply embedded in everything we do, whether advising or detecting anonymous transactions or helping process normal transactions.” When it comes to security – a make or break feature when it comes to personal or business finances – he espouses the importance of biometrics. “It’s giving us a means to digitize physical identity, to store a digital representation of people’s physical markers that help us to identify them in a seamless, easy, and secure fashion.”Be mobile, be agileAvoka, a digital business platform provider, recently released its 2017 State of Digital Sales in Banking Report, which states that half of all banks lack a function that lets customers apply for most personal banking products online. Avoka concludes that most banks fail to capitalize on their investments in digital marketing and digital channels, resulting in abandonment rates of 70 to 90 percent when potential customers try to open an online account. In contrast, HSBC provides a strong online and mobile customer service. Knott explains, “Mobile apps will potentially have a profound influence on our infrastructure. It has changed the ‘come to the front door’ way of doing business.” He also comments on how people’s behavior is changing. Where decades ago monthly statements would pop through the letterbox, people now check their financial status multiple times a day. As a result, “We have to make sure that our mobile apps are responsive, and also that our back-ends are tuned and responsive to our customers’ demand,” says Knott. Being responsive and convenient is part of HSBC’s business ethos. Developed in partnership with the startup Pariti, HSBC’s SmartSave app lets customers put money aside without thinking about it. For example, they can set a rounding rule when they buy something on their card. A purchase of £9.66 would be rounded up to £10, and the remaining 34p would be sent to the customer’s savings account. To achieve this sort of functionality, says Knott, “We can do caching. We can build certain throttling performance into our APIs. We’re going to make sure [the system] is resilient and performs all the way down the stack.”The futureKnott is optimistic about banking in the next decade. Not only will convenience increase, but people will have more control over their finances and “use research tools to figure out what they want by themselves,” he says. “With richer insights about what other people are doing, customers will be more informed and enact decisions in a far more seamless fashion.” He’s also aware that they don’t necessarily want to directly interact with their bank on a daily basis, “Paying for goods and services will be much more seamlessly integrated into our everyday experience, and technologies such as smart sensors, IoT, and 5G will make all that possible.”Banks are coming around to the idea that building cross-industry partnerships is more productive now than ever before. Knott says HSBC will continue to partner with traditional IT product and service companies, but also team up with many smaller companies. “We have to figure out how we do that without swamping them with big company processes,” he acknowledges. Knott also talks about forming stronger connections with partners outside or on the edge of commerce. He’s responsible for the company’s applied and innovation labs, “Through those labs, we’re forming partnerships with academic and research institutes around the world. For example, in the UK, we have a partnership with the Alan Turing Institute. That’s particularly pertinent to data, because they’ve got a very strong data and machine learning focus.” HSBC is currently working on how to use its rich data assets for commercial and social value. “We’ve also partnered with the Advanced Science and Technology Research Institute (ASTRI) in Hong Kong…in research fields such as biometrics, big data, block chain and other analytics technologies.” His vision of the future, therefore, extends far beyond what we associate with traditional banks and is very much data- and partner-centric, “I see non-traditional, more academic, and richer network ecosystems becoming more universal as we move forward.” |
| 智能联接：融合5G、人工智能和物联网 | Intelligent connectivity: The fusion of 5G, AI, and IoT |
| 现在对于传统金融企业来说，数字化不是一个标签，也不是一种潮流，而是决定一个企业能否长盛不衰的关键因素。中国太保的数字化战略旨在利用技术优势实现全商业模式的创新。我们将坚定不移地推进数字化转型，与华为通力合作，致力于为客户提供更加贴心、便捷、优质的保险服务。 | For traditional financial services companies, digitalization is neither a label nor a trend, but a key factor that is crucial to the long-time survival of an enterprise. The CPIC digital strategy aims to innovate business models by leveraging technical advantages. CPIC is walking the road to digital transformation, and we’ll continue working with Huawei to provide customers with convenient, high-quality insurance services. |
| 中国太平洋保险公司实施体制改革，中国太平洋保险（集团）股份有限公司成立 | China Pacific Insurance Co., (H.K.) Limited was established. |
| 中国太保投资管理（香港）有限公司成立 | CPIC Investment Management (H.K.) Company Limited was established. |
| 核心故事在中国东莞松山湖有个占地面积达25000㎡的现代化自动物流中心—华为松山湖供应链物流中心。该物流中心采用射频（RF）、电子标签拣货系统（PTL）、货到人挑选（GTP）、旋转式传送带（Carrousel）等多种先进技术，集物料接收、存储、挑选、齐套、配送功能于一体，是华为重要的样板点基地之一。松山湖的自动物流中心，是华为全球物流供应网络中的典型代表，也是华为供应、物流体系，从被动响应走向主动感知，向敏捷供应、智慧物流转型的结晶之一。在松山湖自动物流中心建成之后，华为启动了智慧物流与数字化仓储项目，旨在通过构建实时可视、安全高效、按需交付的物流服务能力，主动支撑交付保障，提升客户体验，改善物流运营效率。截止目前，项目已经初步实现了物流全过程可视，打造了收发预约、装车模拟、RFID 数字化应用等系列产品，已经取得了上千万的收益。位于中国东莞的松山湖以坐拥8平方公里的淡水湖和14平方公里的生态绿地闻名于世，但在这风景宜人的自然生态圈中却隐藏着一个占地面积达25000㎡的现代化自动物流中心—华为松山湖供应链物流中心。该物流中心采用射频（RF）、电子标签拣货系统（PTL）、货到人挑选（GTP）、旋转式传送带（Carrousel）等多种先进技术，集物料接收、存储、挑选、齐套、配送功能于一体，是华为重要的样板点基地之一。多位一体：构建全透明自动化物流体系华为松山湖供应链物流中心按功能模块分成不同区域，包括栈板存储区及料箱存储区、货到人拣选区、高频物料拣选区、集货区等，以多位一体的先进模式，实现物流端到端业务可视及决策性业务智能处理，极大提升物流各环节协同运作效率。 | HighlightsHoused over 25,000 square meters, Huawei Songshan Lake Supply and Logistics Center provides an array of functions such as materials acceptance, storage, selection, matching, and distribution. To do so, it applies a range of advanced technologies, including radio frequency (RF), picking to light (PTL), goods-to-person pick-up (GTP), and Carousel.Driven by agile supply and intelligent logistics, the center exemplifies Huawei’s shift from passive response to active perception. Years of transformation has enabled Huawei to evolve its ISC project to ISC+.The ISC+ transformation project prioritizes smart logistics and digital warehousing. To date, we’ve visualized the entire logistics process; created transmit-receive reservation, loading simulation, RFID digital application and other products; and saved tens of millions of yuan.Stretching over 14 sqkm of greenbelt land, Songshan Lake in Dongguan, China comprises 8 sqkm of freshwater lakes. In the midst of this pleasant natural environment sits a world-class automated logistics center — Huawei Songshan Lake Supply and Logistics Center.Housed over 25,000 square meters, Huawei Songshan Lake Supply and Logistics Center provides an array of functions such as materials acceptance, storage, selection, matching, and distribution. To do so, it applies a range of advanced technologies, including radio frequency (RF), picking to light (PTL), goods-to-person pick-up (GTP), and Carousel.All-in-OneModular in approach, the logistics center includes areas for pallet storage and bin storage, goods-to-people picking, high-frequency material picking, and cargo consolidation. End-to-end business visualization and intelligent processing greatly improve collaboration and the operations of all logistics procedures. |
| 栈板存储区及料箱存储区，可覆盖华为公司所有PCBA单板原材料管理；中心仓+线边仓的物料供应模式，实现了超期管理、潮敏管理、在线循环盘点和自动补货等功能；多维度、多层次的物料管理模式，满足了业务高可靠性、高复杂性需求。 | The pallet and bin storage areas cover all of Huawei’s raw-material management of PCBA veneers. The mater supply model of the central warehouse + WIP (work in process) warehouse performs various functions, including expiration management, damp-sensitivity management, online circulation inventory, and automatic replenishment. The multidimensional and multilevel material management model ensures high reliability when handling complex scenarios. |
| 高频物料拣选区采用小型堆垛机和流利式货架，实现了自动存储和补货作业，打造了存储、补货、拣选三维一体的立体作业模式。订单由系统进行自动下发和任务关联，通过PTL\RF、接力式拣选和拣选防呆，可高效处理相关任务。 | With minimal requirements for manual work, the goods-to-person picking area is used for picking up low- and mid-frequency materials. The secondary cache warehouse is fully automated. It applies PTL technology, seed sorting, and automated, associated bar-code printing to achieve simultaneous multi-order processing and bar code traceability. |
| 高频物料拣选区采用小型堆垛机和流利式货架，实现了自动存储和补货作业，打造了存储、补货、拣选三维一体的立体作业模式。订单由系统进行自动下发和任务关联，通过PTL\RF、接力式拣选和拣选防呆，可高效处理相关任务。 | The area for high-frequency material picking uses small stackers and rolling racks for automated storage and replenishment, and runs as a 3D process that consolidates storage, replenishment, and pick-up into one process. The system automatically issues orders, associates tasks, and applies PTL\RF relay sorting and foolproof picking. |
| 集货区根据交付对象设置不同区域，并配有多个滑道，按任务令分滑道进行齐套，配合AGV无人智能送料小车，直接供应生产线，实现库房与产线无缝对接。自动物流日均可处理10,000个订单行，日均出库16,000个LPN（注册容器编码）。松山湖的自动物流中心，是华为全球物流供应网络中的典型代表，也是华为供应、物流体系，从被动响应走向主动感知，向敏捷供应、智慧物流转型的结晶之一。1999年，华为刚启动集成供应链改革的时候，我们的销售额只有大概15亿美金，只有深圳一个工厂，供应链员工有3000人。到今年，我们的销售额翻了五六十倍，接近1000亿美金，但我们的供应链员工人数保持在1万人。面向未来，我希望公司在2000亿美金的销售情况下，保持人数不变，并且做到供应链更简单、更及时、更准确。郭平华为轮值CEO变革历程1999年-2004年：内部能力集成，提供优质低成本服务启动ISC（集成供应链变革项目），构建供应链内部的计划、采购、订单、制造、物流等核心基础能力；开展供应链与研发、销售、服务交付等领域流程的集成变革；2004年-2014年：整合全球资源，科学布局网络，贴近客户快速相应。随着华为业务由国内市场向全球市场拓展；服务客户也从全球运营商扩大到全球各类企业、行业客户，再到全球亿万个人消费者客户；华为也开始布局全球供应网络，打造全球物流生态，以贴近客户服务，快速响应客户需求。2015年-2020年：聚焦客户体验提升，帮助客户实现价值创造启动ISC+变革，聚焦客户体验，由被动响应向主动服务转身；对外加强协同能力建设，对内通过数字化创新，为客户创造价值。再续新篇在ISC+这场大变革中，智慧物流与数字化仓储项目是重中之重。截止目前，项目已经初步实现了物流全过程可视，打造了收发预约、装车模拟、RFID 数字化应用等系列产品，已经取得了上千万的收益。智慧物流：为数字化自动物流网络而生智慧物流与数字化仓储项目，利用物联网、大数据、IT服务化平台等技术，结合业界的数字化转型领先实践经验，与整个物流生态链伙伴一起，在物流领域开展物流对象过程数字化、资源规划智能化、实物履行自动化等方面的建设。 通过实时可视、安全高效、按需交付的物流服务能力构建，主动支撑交付保障，提升客户体验，改善物流运营效率。在物流的关键节点，智慧物流可依据不同节点类型及场景优化流程，并匹配最适宜的自动化工具和设备，从而实现小时级的履行能力，大大提高了工作效率。其中，重点仓储通过利用宽窄一体的eLTE无线通信技术和IoT平台，统一连接和管理AGV无人车、自动扫码机等物流自动化设备，同时通过窄带物联网络广泛地联接到托盘、叉车等资产，从而实现自动进出库、自动盘点以及资产精准定位跟踪等功能，打造了高效快速的数字化仓储。不仅如此，在各个节点之间还可实现节点作业与实物运输的无缝连接、风险主动预警、全程可视可管理、实物“一个流”等高效运作模式。 通过移动APP、AIS、物联网等物流先进技术应用，可实时掌握运载工具位置、库内作业状态等信息，通过打通各环节实现了信息的透明共享，以及实物流全过程可视，更好地在线协同人、车、货、仓。同时，通过与外部风险信息的实时互联，还可实现风险的主动预警，物流备选方案的智能提醒等。在配送环节，通过应用大数据及人工智能技术，我们可对货物的配载及配送路线等情况进行智能计算，并给出最佳货物配载方案及最优运输路径，更加智能地实现了资源规划，并有效地提升了货物配送效率。从生产到运输的全生命周期的流程可视，真正做到“人与物的高效沟通”。相较于传统的人力作业模式，降低信息处理成本，提高了信息处理效率及准确率，并促进跨部门、跨企业的运营管理，通过提供一体化的数据集成服务，让客户获得了更高效、便捷、贴心的智慧物流体验。作为全球领先的信息与通信（ICT）解决方案供应商、数字化转型的重要使能者，华为将以数字化转型领先实践经验，与整个物流生态链伙伴一起，共同为全球客户提供最先进的智慧物流解决方案，实现物流过程数字化、资源规划智能化、实物履行自动化等方面的建设，为客户创造更大价值、为市场注入万物互联新动能。 | The cargo consolidation area sets up different spots for different deliveries. Multiple slide rails match with tasks, and work with unmanned AGV smart feeding carts that directly supply production lines to realize seamless interfacing between warehouses and production lines. Automated logistics can handle 10,000 order lines per day, with average daily stock-removal hitting16, 000 LPN (registered container code).Driven by agile supply and intelligent logistics, the center exemplifies Huawei’s shift from passive response to active perception. Years of transformation has enabled Huawei to evolve its ISC project to ISC+.In 1999, Huawei had just begun its integrated supply chain transformation. Our sales revenue was only US$1.5 billion. All we had was one factory in Shenzhen and 3,000 staff in the supply chain. Our sales revenue has grown 50- or 60-fold since that time to approach US$100 billion. But now, we have 10,000 supply chain staff. Looking ahead, I hope that when the company generates revenues of US$200 billion, we will be able to keep the headcount unchanged, and ensure the supply chain remains simple, responsive, and accurate.Guo PingDeputy Chairman of the Board, Rotating CEO, HuaweiInnovative Evolution1999-2004: Integrated internal capacity to provide high-quality, low-cost servicesStarted the ISC (integrated supply chain) project, covering planning, procurement, orders, manufacturing, and logistics, and integrated processes for the supply chain, R&D, sales, service delivery and other areas.2004-2014: Integrated global resources and transformed network layout for a fast, close-to-customer response.As Huawei expanded into the global market, its customers were increasingly global operators, enterprise and industry customers, and millions of individual consumers. Huawei began to lay out the global supply networks and create global logistics ecosystems to provide close-to-customer services and make rapid responses to customer needs.2015-2020: Focused on customer experience and creating valueInitiated ISC+, focusing on customer experience and transforming from passive response to active services; externally strengthened collaborative capabilities; and internally created value for customers through digital innovation.Transformation ContinuesThe ISC+ transformation project prioritizes smart logistics and digital warehousing. To date, we’ve visualized the entire logistics process; created transmit-receive reservation, loading simulation, RFID digital application and other products; and saved tens of millions of yuan.Born for intelligence and agilityThe smart logistics and digital warehousing project applies IoT, big data, IT service platforms and other technologies that use the industry's leading digital transformation practices. We work with partners across the logistics value-chain, creating a robust ecosystem that includes smart resource planning and automated materials implementation. The construction of real-time visible, secure, efficient, and on-demand delivery enhances customer experience and improves efficiency.Smart logistics optimizes processes, matching the best automation tools with equipment according to different node types and scenarios, thus achieving hour-level performance and greatly improving work efficiency.Our warehouses apply integrated wide- and narrow-band eLTE wireless communication technologies; NB-IoT and other data information platforms; and AGV unmanned vehicles, automatic code scanners, and other automation equipment. These technologies connect NB-IoT to trays and forklifts to automate warehousing and inventory and ensure precise asset positioning and tracking, thus creating a fast and efficient digital storage platform.The system seamlessly connects node operations and physical transportation, provides early warnings for active risks, and delivers the full-range of visible management, including the one stream of materials concept. Through mobile apps, AIS, IoT, and other advanced logistics technologies, the system perceives the locations of vehicles, the operating status of warehouses, and other information in real time.By transparently sharing information between all sections and visualizing material flows, the system better coordinates people, vehicles, goods, and warehouses. At the same time, it realizes real-time interconnections with external risk data, enabling early warnings and intelligent reminders of alternative options. In the distribution process, big data and AI make intelligent calculations on cargo storage plans and optimal transport routes to improve distribution efficiency and optimize asset use.With visualization spanning the whole lifecycle process from production to transportation, people and materials can now communicate much more efficiently. Automation has reduced costs, improved data precision, and promoted cross-departmental and cross-enterprise operations and management. Through the provision of integrated data integration services, customers can receive better and faster smart logistics experiences.Huawei is a leading global ICT solutions provider and enabler of digital transformation. We work closely with our global partners across the logistics ecosystem to provide cutting-edge digital logistics solutions, intelligent resource planning, and automated goods fulfillment to continually build more connections. |
| 连接的力量：华为Digital Workplace | Huawei’s Digital Workplace: The power of connections |
| 核心故事云计算、物联网、大数据和人工智能等技术的迅猛发展，让世界进入全新的数字化时代。作为全球领先的ICT供应商，华为要在现有的市场规模下实现业务稳步增长，企业数字化转型是必由之路。华为认为Digital Workplace是企业数字化转型的重要力量，只有持续研究引入该领域最佳实践和先进技术，为华为员工提供简单、安全、高效办公体验，才能不断提升华为员工个人及团队效能，支撑华为战略目标达成。为此，华为计划用3-5年完成Digital Workplace数字化转型，支撑线上线下精兵作战和跨企业团队协同，全面实现员工办公的ROADS(Real-time、On-demand、All-online、DIY、Social)体验。截止目前，项目已取得阶段性成果：华为全球18万员工全面使用WeLink，用户遍布全球171个国家，每日活跃用户达12万。WeLink的推出为华为员工带来全新的办公体验，团队协同效率及跨企业协作效率得到了有效提升。打造全连接的数字办公平台在项目开始前，项目组对公司员工工作现状进行了全面、多维度的深入考察和分析，发现以往采用的“烟囱式”开发模式，留下了一堆集成较差、体验不一致的移动应用。即时聊天、待办审批、邮件处理…各个功能都有单独的APP，造成员工日常办公需要打开多个应用。同时，员工在与客户、合作伙伴等交流时，主要还是依赖于传统线下会议、电话、邮件等，效率相对低下。会议室、开放区等办公区域，硬件装备数字化能力低，无法提供跨地域、跨语种和跨终端的无缝远程协同。为提升员工协同效率，提供一个更简单、高效的办公体验，华为于2016年5月，正式成立了Huawei Works (WeLink)变革项目，旨在用3到5年时间，完成Digital Workplace数字化转型，支撑线上线下精兵作战和跨企业团队协同合作，率先在内部面向员工提供ROADS（Real-time, On-demand, All-Online, DIY, Social）办公体验。WeLink，开启全新的连接体验短短几个月的时间，华为从产品规划到开发再到最终验证成功，Huawei Works项目于2017年1月1日发布华为全连接平台WeLink。相对于原有的办公模式，WeLink实现各种办公应用之间的融合，通过建立与团队、知识、业务、办公装备的连接，打破内外协同边界，构筑简单、安全、高效的极致办公体验。连接团队： 支撑一线蜂群作战跨越功能的连接： WeLink坚持以场景驱动、以人为中心的体验设计，融合邮件，消息、会议、知识、视频、待办审批等办公场景，一个平台即可实现办公协同。WeLink为华为团队作战提供了一种更简单、透明的沟通方式，邮件和群组自然融合，团队可从正式的邮件沟通自由切换到群组即时交流。同时，团队成员可进行群组文件分享、项目任务跟踪等，提升团队协同效率及体验。跨越空间的连接：华为业务遍布世界各地，跨区域，跨内外的沟通成本日渐变高。通过WeLink视频会议，只需点击一个链接，华为员工、客户及供应商就可以通过手机、PAD、PC等终端实现进入视频会议，实时建立“面对面”的沟通体验。目前WeLink频会议已经融入到华为站点远程验收、客户远程沟通、远程面试等多个场景领域，为华为人的内外沟通提供实时连接的桥梁，同时降低企业出差成本。跨越语言的连接：华为员工覆盖全球170多个国家和地区，海外员工本地化比例高达75%。项目团队中跨地域、跨语言沟通的现象非常普遍。WeLink-Translate基于华为自身多年积累的翻译库信息，集成行业先进公有云翻译引擎，实现60种语言的实时智能翻译，让跨区域、跨语言的沟通变得简单。连接知识：提升组织智慧，支撑大平台下的精兵作战形式：WeLink知识平台了融合文字、视频直播、视频点播等多形态服务，为员工提供全渠道学习环境，以更便捷的方式获取企业经验。WeLink打造的企业级在线直播服务，让全球华为员工可以3秒钟接入各种大会直播，业务培训，实现企业知识传承。内容：WeLink可以根据员工所在的组织属性、沟通关系和知识消费习惯，为不同员工整合更适于其阅读学习的文档、业务案例、媒体流等资讯，做到千人千面的知识搜索及智能推荐，降低员工知识学习成本，提升个人作战效能。传播：基于WeLink知识平台，华为员工可以通过博客、知识社区、iLearning专家讲坛等渠道，进行知识分享和交流。同时，Welink平台整合了外部资讯内容，让员工仅登录内部平台就可以阅读各类咨询。连接设备：打通最后“一米”的连接 数字化时代，任何终端、设备，甚至是人都会有一个独一无二的数字化ID，WeLink通过建立员工与会议屏幕、会议设备、办公装备的智能连接，将员工从各种复杂的设备、线缆接入中解放出来，提升会议体验及工作效率。无线投影：通过输入会议室屏幕ID，员工可快速将PC、手机上的材料无线投屏到会议屏幕，进行材料讲解。扫码入会：员工仅需通过WeLink扫描会议二维码或点击会议连接，即可从任意终端3秒内接入会议现场，与其他参会者进行“面对面”交流。异地协同：通过WeLink电子白板，员工可在开放区、会议室快速组织本地会议或远程会议，进行项目沟通协作。同时白板上的沟通纪要可一键发送到员工邮箱，提升会议效率。连接业务：打造开放、融合新生态WeLink作为华为内部的协同平台，重新定义了业务服务接入的标准。基于开放的API接口，通过微程序（We程序）的形式，WeLink可快速接入内部业务服务和外部公有云SAAS服务，并以卡片形式呈现，实现IT敏捷建设，快速响应一线市场变化。WeLink，与你一起探索全连接的世界华为全球18万员工全面使用WeLink，用户遍布全球171个国家，每日活跃用户达12万。WeLink的推出为华为员工带来全新的办公体验，团队协同效率及跨企业协作效率得到了有效提升。WeLink是华为Digital Workplace建设的阶段性探索，初步构建了华为数字化办公转型的基础平台。未来，华为会继续Digital Workplace领域的深入探索，持续构建高效的团队协同能力和跨企业协同能力，助力数字化精兵作战，快步领跑数字时代不一样的办公体验！ | HighlightsCloud computing, IoT, big data, and artificial intelligence (AI) have propelled the world into the digital age. As one of the world’s leading ICT solutions providers, Huawei believes that digital transformation is necessary for enterprises to maintain steady growth in today’s huge market. We also believe that giving our employees a simple, secure, and efficient office experience improves performance, team efficiency, and the fulfillment of strategic objectives. And so we developed the Digital Workplace strategy to drive us on this transformation journey. Over the next three to five years, Huawei is evolving its Digital Workplace to support the online and offline work of elite personnel, enable cross-enterprise collaboration, and internally implement a ROADS experience: Real-time, on-demand, all-online, DIY, and social.To date, our global workforce of 180,000 uses WeLink, with 120,000 active users in 171 different countries, vastly boosting efficiency and collaboration potential. Legacy silosBased on internal analysis, the Digital Workplace project team discovered that multiple poorly integrated mobile apps had created legacy silos. For example, staff had to open separate apps for basic functions like instant messaging, approvals, and emails, while communication with customers and partners was confined to slow, old-school interactions such as phone calls, face-to-face meetings, and email. Office areas including conference rooms and open areas lacked capacity for hardware digitization, and couldn’t support cross-regional, multi-language, and cross-terminal or remote collaboration.To improve collaboration and simplify the office environment, Huawei launched the WeLink transformation project on May 2016, aiming to transform itself into a Digital Workplace over the next five years. WeLink’s new connectivity experienceWeLink introduces a brand-new connectivity experienceOn January 1, 2017, the Huawei Works project team released WeLink, Huawei's fully connected platform. WeLink integrates different office applications and connects teams, knowledge, services, and office devices, breaking down the silos that prevent internal and external collaboration and creating an office experience that’s simple, secure, and efficient.Connecting teamsCross-functional connectivity: WeLink is scenario-driven and people-centric. It integrates email, news, meetings, knowledge, video, and approvals; facilitates collaboration on a single platform; and lets Huawei teams communicate easily and transparently. For example, teams can easily switch between email and group IM to share files and track project tasks. Remote connectivity: WeLink video conferencing cuts global communication costs, including business travel, by letting Huawei's employees, customers, and suppliers talk face-to-face in real-time on any device with just one click. It also enables Huawei staff to remotely inspect and accept base station deployment projects.Cross-language connectivity: Huawei employees work in over 170 countries and areas around the world, with 75 percent of its employees located outside of China. Based on Huawei's translation database, which has expanded over many years, WeLink-Translate uses a public cloud translation engine that can translate 60 languages in real time to deliver fast and simple communication.Connecting knowledge Form: The WeLink Knowledge Platform includes text, live video, video on demand, and other service types to provide staff with a full-channel learning environment. WeLink's enterprise-class online live steaming service lets Huawei staff around the world access live conferences and training programs in a few seconds.Content: When employees require materials for projects or training, WeLink returns tailored recommendations for resources like corporate documents, business cases, and media materials, which cuts costs and boosts efficiency.Communication: The WeLink Knowledge Platform lets Huawei employees access and share internal and external materials on various channels, including blogs, communities, and the iLearning expert forum.Connecting equipmentIn the digital age, terminals, equipment, and even people have unique digital IDs. WeLink boosts efficiency and convenience by establishing intelligent connections between employees, conference screens, conference equipment, and office equipment, eliminating the complexity of connecting different equipment with an array of cables. Wireless projection: After inputting a conference screen ID, employees can quickly project content from their PC or phone to the screen for all to see.Scan to enter conference: By scanning a QR code or clicking a conference link on WeLink, employees can access a conference and interact face-to-face with other participants on any terminal in just three seconds.Remote collaboration: Using the WeLink electronic whiteboard, staff members can quickly arrange local or remote meetings in open areas or conference rooms. Meeting minutes can be sent on email for maximum efficiency.Connecting services WeLink is Huawei's internal collaboration platform, and it’s redefined our service access standards. Based on an open API interface, it uses micro apps (WeApps) to quickly access internal services and SaaS on an external public cloud. WeLink presents knowledge and information in cards and sections, enabling agile IT construction for a rapid response from frontlines.Realizing valueWeLink: exploring a better-connected world with youWeLink is one phase of Huawei's Digital Workplace, the first step to providing a basic platform for Huawei's digital office transformation. In the future, Huawei will continue exploring the Digital Workplace and building capabilities for efficient team and cross-enterprise collaboration to support elite personnel in the digital office age. |
| 当前，面对地球日趋严峻的环境问题，人们越来越多地选择共享单车、电动汽车来支持绿色环保，但在很多时候仍然需要使用石油等不可再生能源。你是否关注到在地球上还剩多少石油来供人类“挥霍”？据保守的专家认为，地球上的石油仅够三四十年，甚至石油危机的到来可能比一般人所预想得还要早。各国政府和有责任的企业都纷纷开发新能源，并持续改进技术以提高石油等能源的采收率和利用率。 | Our Earth faces increasingly grave environmental problems every day. Although more people have realized the significance of environmental protection and have chosen shared bicycles and electric cars as part of their low-carbon lifestyles, yet we still rely heavily on non-renewable energy such as petroleum. How much oil is left and how long will it last? According to estimates from conservative experts, the sustained oil reserves left may last only 30 to 40 years at present rates of consumption, and the next oil crisis may happen much sooner than expected. Governments and socially responsible companies worldwide are intensifying efforts to develop new energy and optimize technologies in order to improve the exploration, production, and utilization of energy such as oil. |
| 传统的技术手段已经不能满足企业的需求，工业4.0时代的到来，智能制造的兴起，为地球的“节能减排”带来了希望。 | Traditional technologies no longer meet the needs of enterprises. However, the advent of the Industry 4.0 era and the rise of smart manufacturing are bringing great hopes for energy conservation and emission reduction for the Earth. |
| 制造属于传统行业，主要包括石油炼化、汽车制造、家电制造、电网、钢厂、化工等。过去，ICT技术在制造行业里属于业务支撑角色，但现在已远不止如此，ICT正在向业务主角演进。由智能工厂、智能物流、智能服务所组成的智能制造已经成为制造行业数字化转型的新方向，而这背后离不开云计算、大数据、IoT、人工智能等新ICT技术的鼎力支持。 | Manufacturing is a traditional industry, and it covers oil refining, automobile manufacturing, appliance manufacturing, power grids, steel mills, chemical plants, and others. ICT systems in the manufacturing industry used to function as support systems, but now they are shifting to work as production systems. Smart manufacturing, which comprises smart factories, smart logistics, and smart services, has become a new direction for digital transformation of the manufacturing industry. The successful implementation of smart manufacturing is impossible without the support of leading new ICT technologies such as cloud computing, Big Data, the Internet of Things (IoT), and Artificial Intelligence (AI). |
| 作为ICT解决方案供应商，华为在油气领域已经有十分成熟的系列解决方案，包括数字油田解决方案、海上油田通信解决方案、数字管道解决方案、智能炼化解决方案和智慧销售解决方案等，涉及无线eLTE、物联网、KunLun服务器、Oceanstor9000高端存储、高性能计算（HPC）、云数据中心、公有云、企业云通信等多系列产品。目前，华为服务于60%的全球TOP20的油气企业，38000公里的油气管道，覆盖41%的主要能源国家和地区。 | Huawei, a leading global ICT solutions provider, offers a portfolio of market-proven solutions for the oil and gas sector, including digital oilfield, offshore oilfield communications, digital pipeline, smart refining, and intelligent sales solutions. These solutions are built upon Huawei’s extensive range of products such as wireless eLTE, IoT, KunLun servers, OceanStor 9000 high-end storage systems, High-Performance Computing (HPC), cloud data centers, public clouds, and cloud-enabled enterprise communications products. As of now, Huawei serves 60 percent of global TOP 20 oil and gas companies, and has worked on more than 38,000 km of oil and gas pipelines, which covers 41 percent of leading energy countries and regions. |
| 2017年4月，石化盈科与华为联合发布了石化智能制造平台，这是继石化盈科与华为签约战略合作之后，双方进一步深入合作所取得的首个重要联合创新成果，也是石化智能工厂2.0建设的核心内容，全面体现了集中集成、物联网接入、IT管控、优化、共享服务、数据处理与分析、人工智能等八项核心能力，未来将会成为流程工业智能制造的“操作系统标准”。智能制造平台融合了云计算、物联网、大数据、虚拟现实、机器学习等ICT新技术，将成为全球领先的流程工业智能制造平台。 | In April 2017, PCITC and Huawei jointly announced a smart manufacturing platform, which is not only the two parties’ first significant joint innovation since they inked strategic partnerships, but also the core part of Smart Factory 2.0 within the Sinopec Group. This platform has eight major capabilities: Centralized integration, IoT access, IT management and control, optimization, shared services, data processing and analysis, and AI. The platform will become a ‘benchmarking operating system’ for smart manufacturing. This smart manufacturing platform also has integrated new ICT technologies such as cloud computing, the IoT, Big Data, Virtual Reality (VR), and machine learning. It is expected to become an industry-leading smart manufacturing platform in the process-centric industry. The eight capabilities of this platform are highlighted as follows: |
| 通过平台集中集成能力，整合石化智能工厂数据与信息，支撑数据资产的集中管控与应用系统的有效集成； | This platform consolidates smart factory data and information, enables centralized management and control of data assets, and allows effective integration with application systems. |
| 通过平台IT管控能力，实现云管理、安全管理、运维管理和统一开发，支撑云资源节点的集中管理、监控和资源分配； | This platform implements cloud management, security management, O&M management, and unified development; and allows for centralized management, monitoring, and resource allocation of cloud nodes. |
| 通过平台共享服务能力，对业务服务和技术服务组件统一管控，为统一开发提供共享的云服务； | This platform centrally manages and controls business and technology service components, and provides shared cloud services to facilitate unified development. |
| 通过平台数据处理与分析能力，挖掘工业大数据的潜在价值，支撑生产异常分析、设备故障诊断与产品质量分析； | This platform unleashes the potential of Big Data and enables production exception analysis, equipment fault diagnosis, and product quality analysis. |
| 华为联合全球合作伙伴匠心推出的FusionCloud智能制造解决方案，具有管理高效、调度敏捷、架构开放等特点，专门针对生产制造行业客户的工业自动化和信息化融合，以实现服务型制造和柔性生产的需求。 | Huawei and global partners join hands to launch a FusionCloud Smart Manufacturing Solution which features efficient management, agile dispatching, and open architecture. This solution is a good choice for customers in the production and manufacturing industries, meeting their needs of industrial automation, information convergence, service-centric manufacturing, and flexible production. |
| 目前，华为制造云解决方案联合了一群行业伙伴如SAP、埃森哲、石化盈科、哈里伯顿（石油石化）、力控（工业组态）等，以全栈式云解决方案来支撑制造行业的设计、生产、供应、物流、营销的端到端管理，实现智能云化和智能服务化；利用大数据分析和挖掘来解决制造企业生产、运维中的深层次问题和痛点，最终帮助客户实现智能管理和构建统一架构的制造云平台。 | This solution is the result of the collaborative efforts of Huawei and a group of industry partners such as SAP, Accenture, PCITC, Halliburton, and ForceCon. By enabling end-to-end management of the manufacturing processes that cover design, production, supply, logistics, and marketing, this full-stack cloud solution makes smart cloud-based and service-oriented manufacturing a reality. Big Data analytics and mining helps manufacturing companies resolve deep-rooted problems and pain points. All these benefits pave the way for building a cloud-enabled manufacturing platform characterized by intelligent management and unified architecture. |
| 也许石油能源枯竭的那一天将不可避免的到来，但我们相信，通过应用云计算、大数据等ICT新技术，可以帮助石油化工等企业更有效、更环保地利用能源，甚至挖掘出更多绿色环保的新型能源。 | The day when we run out of oil will come sooner or later. However, we believe that leading new ICT technologies such as cloud computing and Big Data can play an active role for petrochemical enterprises as they help utilize energy in more efficient and environmental-friendly ways and continue to explore more green new energy sources. |
| 跨国日用消费品巨头宝洁（P&G），一直是全球首屈一指的广告主，以大规模广告投放和品牌建设著称。从“广告主”转型为数字营销，从“摊大饼”的多品牌模式转型为着重细分市场投入，宝洁为适应这个数字化时代不停在转型。产品创新是宝洁转型的主阵地，宝洁一直致力于用最新的移动技术，将人们的日常生活推到新高度。宝洁集团欧洲地区CEO Gary Coombe，讲述了宝洁如何通过增强数字化能力，来提升用户体验。公司与个人消费者的沟通渠道已越来越多。敏捷创新型企业可以抓住这一机遇，打造新的用户互动平台，同时扩展服务类型。宝洁是全球最大的公司之一，年销售额达650亿美元，业务遍布全世界，有长达180年的历史。根据宝洁的2017年4季度财报显示，尽管它缩减了1.4亿美元数字化广告预算，但是其销售额上升2%，持续增长背后来自于数字技术创新的支持。创新技术，创新产品对于移动技术的挑战，宝洁积极应对，不断引入新技术，推出各类创新应用，并促进了物联网技术在日用品行业的应用。在2016年的世界移动大会上，宝洁推出其最新的研发成果，为口腔护理设立了新的标杆：欧乐-B GENIUS。这是全球首款，也是欧乐-B当前最智能的刷牙系统，采用了具有开创性的位置检测技术，即在牙刷中集成了先进的运动传感器，同时使用智能手机摄像头的视频识别功能，对刷牙部位进行跟踪，防止漏刷。用户在对口腔内的任何一个部位进行清洁时，都会通过Oral-B App 4.1收到即时反馈，得到有关刷牙压力和时间的指导。这些功能结合欧乐-B的摆动旋转脉冲技术，以及独特的圆形刷头，可有效帮助用户改善其口腔健康。此后，宝洁不断增强该产品的智能特性。宝洁集团欧洲地区CEO Gary Coombe表示，智能牙刷产品一经面世就取得了巨大成功。宝洁也借此收集了大量数据，展现出创新技术给用户生活带来的巨大变化。“物联网使得万物互联，我们的产品设计也随之改变，给客户带来更多惊喜，” Coombe在伦敦举行的2017华为全球移动宽带论坛上说，“移动带来的影响是革命性的”。当谈到这款牙刷以及相关的APP下载量超过了300万次，Gary继续说道：“这款优秀的牙刷能够实现和手机的互联，用户就好像请了私人牙医。欧乐-B GENIUS及其应用程序将数字指导功能提升到了更高的水准，让用户清晰地了解每次刷牙的实际情况，并为他们提供实时指导，以改善刷牙的每个步骤。现在，我们的用户在家中也能获得只有牙科诊所才能提供的服务——刷牙过程的专业指导。”这款智能牙刷能帮助用户监测刷牙时的用力程度，并且找出清洁不够完善的口腔部位。“平均下来，用户使用智能牙刷的刷牙时间为2分45秒，欧乐-B的专业计时器能确保对口腔内每个象限的清洁时间达到30秒钟，从而符合牙科专家推荐的两分钟刷牙时间的要求，” Coombe说，“通过移动技术的使能，这款牙刷对于改善口腔健康意义重大。”试水人工智能技术宝洁拥有丰富的业务线，覆盖了化妆品如玉兰油、清洁品如Flash、洗涤剂如碧浪等。对于这些国际子品牌，宝洁都开发了相应的手机应用并积极拥抱人工智能技术，为用户提供更多价值。“我们看好人工智能技术，其潜力无限，” Coombe说，“我们已经开始利用AI，并有了卓有成效的实践。”在2017世界移动大会上，宝洁旗下知名护肤品牌玉兰油宣布，将针对全球不同女性的肤质推出全新皮肤测试APP，帮助消费者更好地了解真正适合自己需求的产品。这款被称为“Olay Skin Advisor（玉兰油皮肤顾问）”的APP，为使用者提供了定制化的皮肤教学课程以及产品建议。使用玉兰油皮肤顾问服务的用户可以先自拍，然后系统会对其自拍照与相似年龄的女性照片对比分析，估算出用户的外貌年龄；随后提出相应的建议，帮助用户减少皮肤衰老症状。最为关键的是，皮肤顾问还会向用户推荐合适的玉兰油相关产品。Coombe表示，“数百万用户下载了皮肤顾问APP。AI告诉消费者皮肤的年龄，让他们正视自己的皮肤现状，然后才会推荐护肤方案和产品。这种AI使能的系统未来还会派上更多用场。”化妆品行业的竞争极其激烈。企业必须不断提供市场广阔、拥有独特价值的产品。Coombe进一步指出，宝洁制定了一项新战略，利用和开发新技术来增强现有产品的功能以及多样性，美容APP和智能牙刷就是这一战略指导下的创新产品。宝洁的最终目标是在竞争激烈的零售业实现差异化。数字渠道传播优先移动技术不仅仅通过APP强化了宝洁现有产品的竞争力，而且为企业带来从物流到营销全流程的变革。对于宝洁这种直接面向个人消费者的企业来说，营销和广告是最重要的两大传播阵地。早期的互联网和随后的移动技术对营销和广告产生了翻天覆地的影响。借助新的渠道，企业可以实现更加个性化的营销。与此同时，留给广告投放的硬广空间却更小了。Coombe表示，在欧洲，宝洁投入数字渠道的广告预算超过了电视渠道。“数字渠道已然超过电视等传统媒介，成为主要的广告渠道。这无疑是巨大的挑战。” Coombe进一步说道，“电视营销的创意是基于40英寸的大屏幕的30秒广告，而移动营销的创意是基于5英寸屏幕的1.7秒广告。可以说，移动技术对广告带来的影响是颠覆性的。”“媒体购买渠道也变得十分不同。”尽管平台优化技术尚在开发中，Coombe认为该平台的前景十分光明。“当前的供应链不够完善，运行机制有待优化。”宝洁的很多品牌是面向家庭市场的，所以在线上营销时，必须特别关注品牌宣传的内容。“在新兴市场，我们有部分互联网媒体传播内容不合时宜，” Coombe警告说，“数字渠道很重要，但它的发展有待规范。媒体公司、技术公司应该帮我们找到有价值的、合适的媒体渠道。”全面拥抱更多新技术信息技术给宝洁集团及其合作伙伴的业务都带来了颠覆性影响。互联网和工业物联网彻底改变了制造、物流、零售业，极大地提升了效率，也创造了无数机遇。在制造和物流领域，物联网帮我们节省了运行成本，提升了大公司对供应链的掌控力。在互联网的冲击下，传统零售业可以说变化最大。Coombe指出，宝洁意识到新一轮零售业变革正在悄然展开。“首先是从实体店向网上销售转移，这是借助智能手机实现的，”他说，“如今移动技术带来更多颠覆，零售业开始向智能语音方向转变。”他强调，这对零售商以及品牌本身都会有影响。“信息技术改变了宝洁的业务，改变了我们与用户沟通的方式，帮助用户实现网上购物和手机移动购物。语音购物时代即将来临。对我来说最激动人心的莫过于利用移动技术强化现有产品价值，打造出新业务。”宝洁公司全面拥抱移动技术非一己之力能完成。要实现这一目标，宝洁需要仔细挑选技术合作伙伴，从而能够引领潮流，为客户提供质量好又实用的创新产品和服务。“我们研发各种更新的、采用移动技术的智能产品，包括之前提到的欧乐-B牙刷，还有许多其他产品也即将推出更多升级版。宝洁期待与业界的技术公司积极合作，共同开发新产品，不断为用户带来惊喜。”Coombe从当前的现实展望未来，“新推出的产品和技术能够改变各行各业以及企业，改变可能会产生消极影响，但也创造了巨大的机遇。我相信华为能够使用新技术，帮助我们不断前进、颠覆传统行业，同时为消费者创造更大价值。” | The evolution of mobile technology has transformed almost every industry across the world. It has heightened consumer expectations about their relationship with suppliers of everything from the next generation of cars to everyday items such as toothbrushes and skincare products. One company that has embraced this new technology and propelled the everyday to new heights is multinational consumer goods company Procter & Gamble (P&G).Customers now have new methods to communicate with companies and agile businesses can take advantage of opportunities to create new engagement platforms and expand the types of services they offer. One company which has embraced this new technology and propelled the everyday to new heights is multinational consumer goods company Procter & Gamble (P&G). P&G is one of the largest companies in the world, with annual sales of US$65 billion and operations across the globe. Despite being in business for 180 years, mobile has created one of the largest disruptions the company has experienced. This is a challenge P&G has grasped enthusiastically. It has introduced new technologies to its range and pioneered apps that help IoT become a reality within its sector.P&G launched the world’s first smart toothbrush at Mobile World Congress in 2016 and has since enhanced that application, in addition to creating health and wellness products based around AI and other smart technologies. Its Europe CEO Gary Coombe said the company had seen great success with the connected toothbrush and had collated data that outlined the vast difference the innovation had brought to the lives of customers. “The Internet of Things allows a range of products to be connected and our product design is changing - to the delight of consumers,” he said at Huawei’s recent Mobile Broadband Forum in London. “The impact of mobile has been transformational.”Discussing the toothbrush and related app – which has already attracted three million downloads – he added: “It’s a remarkable piece of technology. It connects your toothbrush with your cell phone. It’s like having a dentist in the bathroom.” The toothbrush itself allows the consumer to understand the level of pressure they apply when cleaning their teeth and identify any areas of their mouth where their brushing technique is less than optimum. “On average, a consumer that uses this technology brushes for over two minutes versus 45 seconds,” Coombe said. “So it makes a meaningful difference to oral health, all enabled by mobile technology.”Applying expertiseP&G has an extensive portfolio, which includes beauty brand Olay, cleaning product Flash and detergent company Ariel. For a number of these notable international brands, it has developed related smartphone applications to enhance the value customers get from the company. In some cases, this has also created excellent upsell opportunities. One of the company’s best received and most well-publicized ventures into creating a digital application relates to its beauty brand Olay. Users of the Olay Skin Advisor service take a selfie, which is then analysed against images of women of a similar age and provides an estimate of the subject’s age. It will then offer advice on how to reduce the signs of ageing, based on skin condition and, vitally for the company, recommend which one of its products could address any problem areas.“The potential of AI is enormous,” Coombe said. “We’ve started on that journey and we have a great example already. Many millions of consumers have downloaded the Skin Advisor app.” “There’s a huge moment of truth as a consumer because the first thing it tells you is your skin ages and then of course it advises you on a skincare regimen and which products to use to improve your skin. That’s an AI-driven system and I’m sure there’s much more to come.”The hugely competitive industry of toiletries, beauty products and other fast moving consumer goods relies on being able to offer something unique, yet something that can be expanded widely.Coombes added the beauty app and toothbrush are the result of the company’s strategy of utilizing and developing new technologies to diversify and enhance its existing offerings. This is one of the many ways P&G seeks to differentiate itself in the competitive retail sector.Mobile marketingIt isn’t just applications designed to enhance the use of existing products where mobile technologies have made an impact on P&G and companies like it. Mobile has transformed everything from logistics to marketing.In marketing and advertising – two key elements of a consumer-facing business such as P&G – first the internet and then mobile changed the landscape completely. New channels offer greater personalization opportunities, but fewer spaces for large-scale, detailed advertisements.  Coombe said the firm’s spend on digital channels in Europe had now expanded to become larger than its TV advertising budget across the continent. “It’s now overtaken TV as our primary channel and of course that raises enormous challenges for us,” he added. “The creative that works on TV is a 30 second commercial that you view on a 40 inch screen. The creative that works on mobile is 1.7 seconds on a 5 cm screen – completely disruptive.” “The other thing is the media supply chain is very different,” he added. Although admitting techniques to perfect the platform were still being developed, he saw a bright future for the platform. “It’s not a fair or well-run supply chain yet,” he noted. “There are far too many bots viewing our advertising as opposed to human beings. We’re not getting what we pay for right now.” As P&G has a number of brands aimed at the family market in its portfolio, the company has to be careful of the types of content its branding was seen in the proximity of, and linked to, when advertising online. “There’s a danger in this newly-emerging world that our communication is associated with unsavoury or unsuitable content on the Internet,” he warned. “Digital is huge for us but it’s still a little bit like the Wild West. It’s important that the media suppliers, and the media owners, and the technology companies help us create a media channel that’s worthy, appropriate, and fair.”Retail disruptionTechnology has brought disruption across the entire span of P&G, and its partners’ businesses. The Internet and industrial IoT have transformed the manufacturing, logistics and retail industries completely, creating both efficiencies and opportunities. In manufacturing and logistics, IoT has enabled cost savings as well as improving the control large companies have on their supply chains.Traditional retail, however, has arguably seen the biggest change from the Internet. Coombe said his company recognised there was now a second round of disruption taking place in the retail sector. “First was the move from real stores to going online, usually using a cell phone,” he said. “Now mobile technology is enabling even more disruption, which is the move to voice.” This, he emphasised, impacts both retailers and the brands themselves.“Technology transforms every aspect of our business; the way we communicate with them, the way we enable them to shop via online and mobile-enabled shopping,” he added. “Voice shopping is coming, but perhaps the most exciting thing for me is the fact that our historically fairly functional products, with the addition of mobile technology, can create new services.” Partnering for successTo embrace mobile technology fully, it’s vital that companies such as P&G stay ahead of its rivals and launch successful and popular use cases that embrace new technologies such as the Internet of Things. To achieve this, P&G carefully selects its technology partners to ensure it stays ahead of the curve and delivers innovations that customers find exciting and useful. “As we think about developing products that utilize mobile technology – I mentioned the Oral-B toothbrush, there are many others like that coming – we’re looking forward to partnering with many companies in this space to develop that technology together and to delight consumers together,” Coombe added.“The fact that [mobile] technology can create products and services for consumers that delight them is very, very exciting for our industry.”Commenting on his experience with Huawei at the Global Mobile Broadband Forum in London, he added, “If they can deliver the sort of technology dreams that I’ve seen them talk about, it will be transformational. Not just to the telecoms industry, not just to the digital industry, but to all industries.” “The reality is what’s being created has the ability to disrupt all industry and all of commercial enterprise. Disruption can be a negative thing, but it can also be a huge opportunity and I’m sure that Huawei can deliver the technology to help us disrupt industry for the better, and delight consumers going forward.” |
| 智能联接：融合5G、人工智能和物联网 | Intelligent connectivity: The fusion of 5G, AI, and IoT |
| 跨国日用消费品巨头宝洁（P&G），一直是全球首屈一指的广告主，以大规模广告投放和品牌建设著称。从“广告主”转型为数字营销，从“摊大饼”的多品牌模式转型为着重细分市场投入，宝洁为适应这个数字化时代不停在转型。产品创新是宝洁转型的主阵地，宝洁一直致力于用最新的移动技术，将人们的日常生活推到新高度。宝洁集团欧洲地区CEO Gary Coombe，讲述了宝洁如何通过增强数字化能力，来提升用户体验。公司与个人消费者的沟通渠道已越来越多。敏捷创新型企业可以抓住这一机遇，打造新的用户互动平台，同时扩展服务类型。宝洁是全球最大的公司之一，年销售额达650亿美元，业务遍布全世界，有长达180年的历史。根据宝洁的2017年4季度财报显示，尽管它缩减了1.4亿美元数字化广告预算，但是其销售额上升2%，持续增长背后来自于数字技术创新的支持。创新技术，创新产品对于移动技术的挑战，宝洁积极应对，不断引入新技术，推出各类创新应用，并促进了物联网技术在日用品行业的应用。在2016年的世界移动大会上，宝洁推出其最新的研发成果，为口腔护理设立了新的标杆：欧乐-B GENIUS。这是全球首款，也是欧乐-B当前最智能的刷牙系统，采用了具有开创性的位置检测技术，即在牙刷中集成了先进的运动传感器，同时使用智能手机摄像头的视频识别功能，对刷牙部位进行跟踪，防止漏刷。用户在对口腔内的任何一个部位进行清洁时，都会通过Oral-B App 4.1收到即时反馈，得到有关刷牙压力和时间的指导。这些功能结合欧乐-B的摆动旋转脉冲技术，以及独特的圆形刷头，可有效帮助用户改善其口腔健康。此后，宝洁不断增强该产品的智能特性。宝洁集团欧洲地区CEO Gary Coombe表示，智能牙刷产品一经面世就取得了巨大成功。宝洁也借此收集了大量数据，展现出创新技术给用户生活带来的巨大变化。“物联网使得万物互联，我们的产品设计也随之改变，给客户带来更多惊喜，” Coombe在伦敦举行的2017华为全球移动宽带论坛上说，“移动带来的影响是革命性的”。当谈到这款牙刷以及相关的APP下载量超过了300万次，Gary继续说道：“这款优秀的牙刷能够实现和手机的互联，用户就好像请了私人牙医。欧乐-B GENIUS及其应用程序将数字指导功能提升到了更高的水准，让用户清晰地了解每次刷牙的实际情况，并为他们提供实时指导，以改善刷牙的每个步骤。现在，我们的用户在家中也能获得只有牙科诊所才能提供的服务——刷牙过程的专业指导。”这款智能牙刷能帮助用户监测刷牙时的用力程度，并且找出清洁不够完善的口腔部位。“平均下来，用户使用智能牙刷的刷牙时间为2分45秒，欧乐-B的专业计时器能确保对口腔内每个象限的清洁时间达到30秒钟，从而符合牙科专家推荐的两分钟刷牙时间的要求，” Coombe说，“通过移动技术的使能，这款牙刷对于改善口腔健康意义重大。”试水人工智能技术宝洁拥有丰富的业务线，覆盖了化妆品如玉兰油、清洁品如Flash、洗涤剂如碧浪等。对于这些国际子品牌，宝洁都开发了相应的手机应用并积极拥抱人工智能技术，为用户提供更多价值。“我们看好人工智能技术，其潜力无限，” Coombe说，“我们已经开始利用AI，并有了卓有成效的实践。”在2017世界移动大会上，宝洁旗下知名护肤品牌玉兰油宣布，将针对全球不同女性的肤质推出全新皮肤测试APP，帮助消费者更好地了解真正适合自己需求的产品。这款被称为“Olay Skin Advisor（玉兰油皮肤顾问）”的APP，为使用者提供了定制化的皮肤教学课程以及产品建议。使用玉兰油皮肤顾问服务的用户可以先自拍，然后系统会对其自拍照与相似年龄的女性照片对比分析，估算出用户的外貌年龄；随后提出相应的建议，帮助用户减少皮肤衰老症状。最为关键的是，皮肤顾问还会向用户推荐合适的玉兰油相关产品。Coombe表示，“数百万用户下载了皮肤顾问APP。AI告诉消费者皮肤的年龄，让他们正视自己的皮肤现状，然后才会推荐护肤方案和产品。这种AI使能的系统未来还会派上更多用场。”化妆品行业的竞争极其激烈。企业必须不断提供市场广阔、拥有独特价值的产品。Coombe进一步指出，宝洁制定了一项新战略，利用和开发新技术来增强现有产品的功能以及多样性，美容APP和智能牙刷就是这一战略指导下的创新产品。宝洁的最终目标是在竞争激烈的零售业实现差异化。数字渠道传播优先移动技术不仅仅通过APP强化了宝洁现有产品的竞争力，而且为企业带来从物流到营销全流程的变革。对于宝洁这种直接面向个人消费者的企业来说，营销和广告是最重要的两大传播阵地。早期的互联网和随后的移动技术对营销和广告产生了翻天覆地的影响。借助新的渠道，企业可以实现更加个性化的营销。与此同时，留给广告投放的硬广空间却更小了。Coombe表示，在欧洲，宝洁投入数字渠道的广告预算超过了电视渠道。“数字渠道已然超过电视等传统媒介，成为主要的广告渠道。这无疑是巨大的挑战。” Coombe进一步说道，“电视营销的创意是基于40英寸的大屏幕的30秒广告，而移动营销的创意是基于5英寸屏幕的1.7秒广告。可以说，移动技术对广告带来的影响是颠覆性的。”“媒体购买渠道也变得十分不同。”尽管平台优化技术尚在开发中，Coombe认为该平台的前景十分光明。“当前的供应链不够完善，运行机制有待优化。”宝洁的很多品牌是面向家庭市场的，所以在线上营销时，必须特别关注品牌宣传的内容。“在新兴市场，我们有部分互联网媒体传播内容不合时宜，” Coombe警告说，“数字渠道很重要，但它的发展有待规范。媒体公司、技术公司应该帮我们找到有价值的、合适的媒体渠道。”全面拥抱更多新技术信息技术给宝洁集团及其合作伙伴的业务都带来了颠覆性影响。互联网和工业物联网彻底改变了制造、物流、零售业，极大地提升了效率，也创造了无数机遇。在制造和物流领域，物联网帮我们节省了运行成本，提升了大公司对供应链的掌控力。在互联网的冲击下，传统零售业可以说变化最大。Coombe指出，宝洁意识到新一轮零售业变革正在悄然展开。“首先是从实体店向网上销售转移，这是借助智能手机实现的，”他说，“如今移动技术带来更多颠覆，零售业开始向智能语音方向转变。”他强调，这对零售商以及品牌本身都会有影响。“信息技术改变了宝洁的业务，改变了我们与用户沟通的方式，帮助用户实现网上购物和手机移动购物。语音购物时代即将来临。对我来说最激动人心的莫过于利用移动技术强化现有产品价值，打造出新业务。”宝洁公司全面拥抱移动技术非一己之力能完成。要实现这一目标，宝洁需要仔细挑选技术合作伙伴，从而能够引领潮流，为客户提供质量好又实用的创新产品和服务。“我们研发各种更新的、采用移动技术的智能产品，包括之前提到的欧乐-B牙刷，还有许多其他产品也即将推出更多升级版。宝洁期待与业界的技术公司积极合作，共同开发新产品，不断为用户带来惊喜。”Coombe从当前的现实展望未来，“新推出的产品和技术能够改变各行各业以及企业，改变可能会产生消极影响，但也创造了巨大的机遇。我相信华为能够使用新技术，帮助我们不断前进、颠覆传统行业，同时为消费者创造更大价值。” | Why natural language processing is AI’s jewel in the crown |
| ABB中国区副总裁、CIO兼中国数字化业务发展负责人李清源也认为，数字化技术在工业市场引发了新一轮创新，而工业数字化毫无疑问地吸引了全球的注意力。“各国政府在寻求高能效、高生产效率和安全运营。这需要所有公司共同寻找更优的运营模式。”创新技术的快速应用过去几年，许多创新技术问世，包括云计算、移动技术、物联网、先进材料技术等，这些技术很快就被应用到工业领域。在制造业，ABB清楚地看到，企业必须不断提升生产和能源利用效率。ABB提供各类产品和方案来支持智能制造。李清源说道：“我们本身也是一家制造业公司，生产大量的产品设备。”ABB在全球100多个国家运营，业务绝不仅只有机器人。ABB的解决方案包括软件层、自动化系统和制造执行系统，还有机器人、引擎、驱动系统。ABB在全球范围内拥有136000名员工，其中17000名在中国。“我们在全球范围内拥有7000万台数字化互联设备，以及70000套数字化控制系统和6000套企业级软件解决方案，都为ABB的数字化提供了坚实的基础。”ABB的数字化解决方案和连接用户设备的平台，能为用户提供云端高级分析服务，并且通过自动化系统、机器人、引擎等，实现对物理世界的控制，为企业客户创造巨大的价值。合作领域的不断扩大ABB一直不断努力，与各行业玩家建立合作伙伴关系。数字世界涉及的因素太多，没有哪一家公司能够做到面面俱到，就数字化进程来说，就涉及IT和OT的融合。ABB与华为在智能制造以及工业机器人领域合作，将最新的5G无线连接技术和智能传感器结合起来，打造新的解决方案，应对各类制造业面临的挑战。“ABB和华为还在各垂直行业通力合作，联合开发解决方案，共同开拓市场。”李清源说。有预测显示，2019年工业机器人的数量将会增长到260万，密度也会由2014年的36个每万工人，增加到2020年的150个每万工人。Rautavuori注意到中国是全球最大、增长最快的机器人市场。但是在中国，工业机器人和劳动工人数量的比率仍然很低。在这方面，中国远远落后于日本、韩国、德国、美国等机器人强国。他说：“中国正在快速追赶，我们很激动能够参与到中国机器人行业的赶超历程中。”机器学习的尝试关于人工智能（AI），Rautavuori说，ABB专注于机器学习，“智能部件和传感器的发展让我们可以利用机器学习技术，开发新的机器人编程方式。”比如，除了编程，“我们正转向对机器人进行训练，教它们如何完成各项任务。有了智能部件和传感器，机器人就能自行学习，这有点像小孩子的自学。先教它们，然后它们就会自主尝试。我们在这一领域打造解决方案，简化未来的机器人应用。”工业机器人需要极其灵活，才能满足大规模定制化要求。Rautavuori指出，在运动控制和线上线下编程方面，ABB的软件能力也是业界知名的。他认为工业机器人市场是一个巨大的未开发市场，而ABB已经持续专注这一领域40多年。至于机器人会如何影响人们的日常生活，Rautavuori说：“我们注意到很多公司在进军消费者领域。他们会在未来利用诸多技术，或者机器人，给人们的日常生活带来更多意想不到的便利。” | Jerry Li, VP and head of business development, digital solutions and CIO at ABB China, agrees that digital technology is fueling a new round of innovation in industrial markets, with industrial digitalization certainly attracting a lot of attention globally. “I think most governments and businesses are looking for energy efficiency, productivity increases and safer operations. These require all businesses to find a better way to operate,” Li said.Rapid adoptionOver the last couple of years, he said many innovative technologies have been introduced – from cloud computing and mobility to the Internet of Things as well as advanced materials – and they’re being quickly adopted in industrial areas. In the manufacturing sector, ABB sees a clear need for businesses to improve their production efficiency and energy efficiency.While ABB offers a wide range of products and services in its portfolio that support improvements in productivity, Li said, “We’re also a manufacturing company and we produce a lot of equipment.” ABB, with operations in more than 100 countries, isn't just a robotics company. Its solutions range from the software layer to automation systems and to products such as robots, motors and drives. It employs 136,000 staff globally, including 17,000 in China. The company has connected more than 70 million digitally enabled devices and installed more than 70,000 digital control systems and 6,000 enterprise software solutions for its customers. “All of this makes it a really great foundation for digitalization,” said Li.The combination of its digital solutions and a platform that connects customers’ devices to perform advanced analytics on the cloud side and control the physical world through its automation systems, robots, and motors creates a huge amount of value for companies.Partners ABB is continuously looking for partnerships with all the major players in the industry. Li believes that, “With so many elements in the digital world, there’s no single company that can do everything by themselves. If you look at digitalization, we’re talking about IT and OT convergence.”The company, which is partnering with Huawei in smart manufacturing as well as industrial robotics, is looking at how to combine the latest wireless connection technologies and smart sensors to find new solutions to solve manufacturing challenges. “We’re also working together in many industries to look for joint solutions and joint market developments,” Li said.Forecasts estimate that there will be 2.6 million industrial robots by 2019, and the density of robots will jump from 36 per 10,000 workers in 2014 to 150 per 10,000 workers by 2020 in China. This will create exponential growth, he said.Rautavuori noted that China is now the largest robotics market as well as the fastest growing. However, when comparing the density of industrial robots to the country’s entire manual labour force, China is still far from the top in the world, with Japan, South Korea, Germany, and the US leading. “China is still catching up, but catching up very, very fast, and we’re very excited to be part of that journey,” said Rautavuori.Teaching robotsOn artificial intelligence (AI), Rautavuori said that ABB focuses on machine learning, “The development in smart components and sensors makes it possible to use machine learning to develop new ways of programming robots.”For example, he said, instead of programming, the company is moving towards teaching the robot. “We’re showing it how to do things. And with smart components and sensors, the robot will figure out and learn by itself, a little bit like a child learns. You teach them and then they try. So that’s an area where we’re developing solutions that will simplify and make it easier to use robots in the future.”Industrial robots need to be flexible to meet the needs of mass customization, he said, adding that ABB is well known in the market for its software capabilities when it comes to motion control and online and offline programming. Rautavuori believes the industrial robotics market is still a huge untapped market and ABB, which has been in the robotics industry for more than 40 years, is focused solely on the industrial space. But looking at how robotics is likely to impact people’s day-to-day lives, Rautavuori concludes, “We see lots of companies going in the consumer space. And I’m sure there will be lots of, whether we call them robots or not, technology that will help you in your daily life.” |
| 智能联接：融合5G、人工智能和物联网 | Intelligent connectivity: The fusion of 5G, AI, and IoT |
| 在西班牙里瓦斯-瓦西亚马德里（Rivas -Vaciamadrid）的Jose Saramago学校门口，一位父亲由于找不到孩子，着急地向正在学校附近巡逻的警察求助，巡警立刻呼叫指挥中心请求支援，并使用eLTE手持终端拍下父亲手机里孩子的照片，回传到指挥中心。Rivas警察局指挥中心接到报警后，通过指挥系统检测离学校最近的巡逻车，派他们立刻前去支援，并将孩子的照片和寻人通知下发至辖区内所有警察的eLTE手持终端上；与此同时，指挥中心通过调取周边摄像头的实时画面寻找孩子踪迹。不到半小时，前去支援的警察就在附近的篮球场发现了疑似走失的孩子，并立即用eLTE手持终端与报警人进行视频通话，确认目标，最终让父子团聚。 | In front of the Jose Saramago school gate in the city of Rivas-Vaciamadrid, Spain, a father who was unable to find his child was anxiously seeking help from a police officer patrolling near the school. The police officer immediately called the Command Center for support and meanwhile used his handheld eLTE terminal to photograph the child’s pictures stored in the father’s mobile phone, and then transmitted the captured photo to the Command Center. |
| 在西班牙里瓦斯-瓦西亚马德里（Rivas -Vaciamadrid）的Jose Saramago学校门口，一位父亲由于找不到孩子，着急地向正在学校附近巡逻的警察求助，巡警立刻呼叫指挥中心请求支援，并使用eLTE手持终端拍下父亲手机里孩子的照片，回传到指挥中心。Rivas警察局指挥中心接到报警后，通过指挥系统检测离学校最近的巡逻车，派他们立刻前去支援，并将孩子的照片和寻人通知下发至辖区内所有警察的eLTE手持终端上；与此同时，指挥中心通过调取周边摄像头的实时画面寻找孩子踪迹。不到半小时，前去支援的警察就在附近的篮球场发现了疑似走失的孩子，并立即用eLTE手持终端与报警人进行视频通话，确认目标，最终让父子团聚。 | Upon receiving this incident, the Command Center for the Rivas-Vaciamadrid Police Station took immediate actions to address the situation. They quickly pinpointed the nearest patrol vehicles through their command system, dispatched them to the field for support, and sent the child’s photo and child-missing notification to the handheld eLTE terminals of all the police officers in that region. At the same time, the Command Center searched for any traces of the child by invoking real-time video feeds shot by surrounding cameras. Less than half an hour later, a police officer found a possible child in a nearby basketball court and immediately used his handheld eLTE terminal to start a video call with the father. After confirmation, this child was the missing one and the father and son were then reunited. |
| 全球每年失踪儿童数量庞大，仅美国每年就有约80万失踪儿童，对于这类案件来说，最初的24小时是寻找、解救的黄金期。如果使用TETRA窄带网络，想要像Rivas警察们这样高效地寻找失踪儿童或者处理其他警情是无法想象的，他们到底是如何做到的呢？ | There are a large number of children missing in the world every year. In the United States alone, about 800,000 children go missing every year. The first 24 hours are the golden period of time to find missing children. Police officers in Rivas-Vaciamadrid could not have found the missing child or handle similar cases so quickly if they used a Terrestrial Trunked Radio (TETRA) narrowband network. So, how did they make this possible? |
| Rivas –Vaciamadrid（以下简称Rivas）是西班牙马德里自治区的一个城市，面积67.4平方公里，人口约8.4万人，距离马德里市中心15公里。这座城市是马德里地区最年轻的城市之一，居民的平均年龄是34岁，也是最环保和可持续发展的城市之一，2014年其还赢得了欧盟可持续交通奖。Rivas是西班牙智能城市网络RECI的创始成员之一，被认为是西班牙智慧城市的先行者，目前拥有800公里光纤电缆连接86座市政建筑，并为整个地区提供公共Wi-Fi服务。 | Rivas-Vaciamadrid is a city belonging to the autonomous community of Madrid, Spain. The city covers a land area of 67.4 square kilometers with a population of about 84,000 and is located just 15 kilometers away from the center of Madrid. This city is one of the youngest in the Madrid region, with the average age of citizens being 34. It is also one of the most environment-friendly and sustainable cities. In 2014, Rivas-Vaciamadrid won the European Union’s Sustainable Urban Mobility Planning (SUMP) Award. |
| Rivas市长Pedro del Cura Sanchez表示：“2004年，这座城市就决定开始投资于技术。确定这一投资的重要因素有两个，首先要建立一个管理更加完善的城市，提供足够的技术资源，使管理更加高效，并大幅节约资源；第二就是将这些技术服务于市民。”这也与华为帮助客户实现智慧城市建设三个目标“善政、惠民、兴业”不谋而合。 | Pedro del Cura Sanchez, Mayor of Rivas-Vaciamadrid, said: “In 2004, the city decided to start investing in technology. There were two important factors to determine this investment. The first factor was to create a better-managed city with enough technology resources for more efficient city management and greater savings. The second factor was to better serve citizens with these technology resources.” |
| TETRA窄带仅能提供语音业务，不支持多媒体数据类应用，如实时GIS、移动监控等，不能满足政府和警察系统对视频和大流量数据的要求，例如警察希望“看得见”，即能在短时间内通过视频清楚了解事件现场状况，导致警察缺乏现场感知能力，警务效率低。 | The TETRA narrowband provided voice services only and did not support multimedia data applications, such as a real-time Geographic Information System (GIS) and mobile surveillance. As a result, this network failed to meet the requirements of government and police agencies for video and large-traffic data usage. For example, the police desired to have added visibility capabilities to learn about on-site situations through videos within a short period of time. However, this network did not support such functions, resulting in limited awareness of on-site situations and a low policing efficiency. |
| 接处警系统也没有融合，即指挥调度系统及视频监控系统是隔离的，使得应急响应慢，部门协同困难。 | The incident receiving and handling systems were not integrated with each other. In other words, the command and dispatch system was isolated from the video surveillance system. This isolation slowed down emergency response and created difficulties in cross-department collaboration. |
| 鉴于华为是业界少有的能提供云、管、端协同ICT解决方案的厂商，所提供的eLTE宽带集群解决方案集视频回传、专业宽带集群、应急通信等专业业务于一体，能实现可视化调度，并且该方案是以公共安全为主、可扩展到其他领域的智慧城市综合接入神经网络平台，能为更多智慧城市应用打下良好的基础，Rivas市政最终选择了华为。 | Huawei is one of a few vendors in the industry which provides a holistic set of ICT solutions characterized by cloud-pipe-device synergy. Huawei’s eLTE Broadband Trunking Solution provides professional services, such as video backhaul, broadband trunking, and critical communications, on a single network to enable visualized dispatching. This solution is mainly intended for the public safety sector and extends to Smart Cities with integrated access network platforms to other sectors, establishing a solid foundation for more Smart City applications. |
| 华为eLTE宽带集群解决方案的主要优势体现在以下几方面。 | The Huawei eLTE Broadband Trunking Solution provides the following compelling features: |
| 一网支持多媒体集群语音、视频调度，高清无线视频监控，高清视频和图片实时分发/回传，超远程数据采集和移动办公等业务。 | A single network supports multimedia trunking, video dispatching, High-Definition (HD) wireless video surveillance, real-time distribution and backhaul of HD videos and pictures, ultra-long-distance data acquisition, and mobile office services. |
| 此外，为了解决频谱难题，华为携手生态圈合作伙伴西班牙第四大移动运营商Masmovil，由其提供2.6 GHz频段; 与现网集成商Tecnicas Competitivas合作，由其提供eLTE宽带集群的交付和维护服务；并选择无线规划咨询公司Aptica为项目提供网络规划和技术咨询和建议。 | To address spectrum problems, Huawei collaborates with Masmovil, the fourth largest mobile carrier in Spain, to provide a 2.6 GHz frequency band; Huawei teams up with the live-network integrator Tecnicas Competitivas who provides eLTE broadband trunking delivery and maintenance services; and Huawei works with the wireless planning consulting firm Aptica to provide network planning, technical consultation, and recommendations for the project. |
| 华为eLTE宽带集群解决方案使得Rivas警察无论是在重大活动、应急处置，还是日常警务等场景都能极大地提升指挥调度效率和快速响应能力。2017年Rivas接警效率、处警效率以及破案率都有显著提升，整体犯罪率也有所下降。Rivas警察局长Fernando Argote Cardenosa表示：“从指挥中心来看，这将对Rivas居民十分有利。在这里，我们控制城市交通，在一些我们所解决的公共安全事件中，如未成年人失踪，我们发现华为eLTE宽带集群解决方案至关重要，最重要的是让指挥中心能够迅速响应。” | Huawei’s eLTE Broadband Trunking Solution dramatically improves the command and dispatch efficiency as well as quick response capabilities for Rivas-Vaciamadrid police officers in all cases, regardless of major activities, emergency handling, and daily police operations. |
| 华为eLTE宽带集群解决方案使得Rivas警察无论是在重大活动、应急处置，还是日常警务等场景都能极大地提升指挥调度效率和快速响应能力。2017年Rivas接警效率、处警效率以及破案率都有显著提升，整体犯罪率也有所下降。Rivas警察局长Fernando Argote Cardenosa表示：“从指挥中心来看，这将对Rivas居民十分有利。在这里，我们控制城市交通，在一些我们所解决的公共安全事件中，如未成年人失踪，我们发现华为eLTE宽带集群解决方案至关重要，最重要的是让指挥中心能够迅速响应。” | Fernando Argote Cardenosa, the Director of the Rivas-Vaciamadrid police station, stated: “The Command Center provides advantages which are clearly beneficial to Rivas-Vaciamadrid citizens. From here, we control the city traffic. For many public safety incidents, such as missing children, we find that the Huawei eLTE Broadband Trunking Solution is crucial. The most important thing for public safety is enabling the Command Center to respond quickly.” |
| 目前，Rivas 80％的区域实现了eLTE网络的覆盖，但真正使Rivas智慧城市与众不同之处是所有管理系统的深度融合。几乎城市里所有可以远程管理的元素都连接到网络，从视频监控、能源管理、公共照明，到装饰喷泉，街道公共设施和公园灌溉。政府还提供了基于位置的服务，让市议员可以通过任何设备的Wi-Fi使用Bidi、RFID和NFC在城市任何地方接入管理城市的应用程序。 | Currently, 80 percent of the Rivas-Vaciamadrid area benefits from the eLTE network coverage. What makes the Rivas-Vaciamadrid city stand out from other cities is that all city management systems are deeply converged. Almost all city facilities that can be remotely managed are networked, including video surveillance, energy management, public lighting, decorative fountains, street-side public facilities, and park irrigation facilities. The local government also provides location-based services, so that any city managers can access city management applications anytime, anywhere, and from any device through Wi-Fi access via Bidi, RFID, and NFC. |
| Rivas电信部主管Carlos Ventura说道：“从窄带向宽带的演进是大势所趋，华为eLTE网络与城市中的所有系统、特别是与Rivas智能城市项目很好地融合。利用eLTE终端可以接入城市中的任何系统，如公共照明，在发生紧急情况时，警务人员或市政管辖的其他部门人员可以增加照明并执行其他操作，例如用eLTE终端打开门或建筑物，而不需要钥匙或其他协助。” | Carlos Ventura, the Director of Rivas-Vaciamadrid’s Telecommunication Department, pointed out: “The evolution from narrowband to broadband is an inevitable trend. Huawei’s eLTE network solution is well integrated with all the systems in the city, especially with the Rivas-Vaciamadrid Smart City project. From an eLTE terminal, you can access any system in the city, such as public lighting. In the event of an emergency, police officers and other city managers may increase lighting and perform any other actions, such as opening doors or buildings via the eLTE terminal without the need for keys or other assistance.” |
| Rivas经济发展和就业委员会、内部制度和电信委员会Ana Reboiro表示：“华为与Rivas市议会合作开发的新eLTE网络可以为城市的安全和应急服务提供语音、视频和信息服务。成为应对城市发展新挑战的基础，并将改善Rivas居民的日常生活，这是西班牙境内实施的第一个这样的项目，Rivas又一次引领了城市服务新技术的发展。我要感谢华为对Rivas市议会的信任。希望我们能够继续共同开发新技术，面对未来新的挑战。” | Ana Reboiro, a member of the Economic Development and Employment Council and Interior System and Telecommunications Council, said: “The new eLTE network developed by Huawei and our Rivas-Vaciamadrid City Council provides voice, video, and information services for the city’s security and emergency response. This new network is the foundation for addressing new challenges in urban development and will improve the daily lives of Rivas-Vaciamadrid citizens. This is the first-of-its-kind project in Spain. Once again, Rivas-Vaciamadrid leads the development of new technologies for city services. I would like to thank Huawei for the trust that they have placed in the Rivas-Vaciamadrid City Council. I hope that we can continue to work together on developing new technologies to respond to new challenges in the future.” |
| 华为以云计算、物联网和人工智能等一系列最新规模商用的新ICT技术，打造智慧城市的神经系统。同时依托于华为在多种技术上的创新与积累，为客户构建智慧城市的开放平台，向下兼容多种终端，向上支撑各种应用。期待未来华为能与生态合作伙伴一起，支撑Rivas实现城市日常运行可视化，跨部门应急响应和基于大数据的城市管理决策，进一步改善教育、体育、能源和公共安全等公共服务的运作，为Rivas 智慧城市之路打造坚实的基础。 | By leveraging a series of new ICT technologies, such as cloud computing, the Internet of Things (IoT), and Artificial Intelligence (AI), Huawei is dedicated to expanding ‘nervous system’ functionalities that empower Smart Cities. With innovation and accrued experiences in various technologies, Huawei has developed an open platform for Smart Cities. This platform is compatible with various devices in the downstream direction and supports a wide range of applications in the upstream direction. In the future, Huawei will continue to work together with ecosystem partners to help Rivas-Vaciamadrid add visibility to daily city operations, accelerate cross-departmental emergency response and Big Data–based city management decision-making, and further enhance the operations of public services such as education, sports, energy, and public safety. All these enhancements will create a solid foundation for the ongoing Smart City journey of Rivas-Vaciamadrid. |
| 华为助艾古莱尼市成为南非智慧城市领跑者 | Huawei Helps The City of Ekurhuleni Grow into a South African Smart City Pioneer |
| 数字化实际上是可持续发展的推动器之一，是实现Open Power的关键因素。Enel正努力将我们面向最终客户的外部服务流程以及内部流程进行数字化转型。其中重点关注网络安全、应用优化、数据中心转型、云技术广泛应用以及智慧移动办公领域。华为的POL解决方案满足了Enel内部数字化转型需求，使我们的网络更加可靠、高效和节能。华为是可靠的合作伙伴，我们期望与华为在数字化和可持续性方面开展更多的合作。 | Digitization is, in fact, an enabler of sustainable growth, and it is a key factor to achieve an open power approach in the energy business. We are trying to digitize both the processes through which we offer services to our end customers and our internal processes, focusing on the use of cybersecurity, the optimization of applications, data center transformation, a massive use of cloud technology, and smart and mobile working. Huawei POL provides what we need in digitization within the company and makes our network more reliable, efficient, and energy-saving. Huawei is a reliable partner, and I’m looking forward to more cooperation with Huawei in digitization and sustainability. |
| 作为一家跨国公司，Enel拥有着全球最大的配电网络，业务已扩展到全世界30多个国家，在2017年世界500强中，Enel排名第84位。当今世界正面临着前所未有的挑战，Enel有能力、也有义务通过可持续的方式来改变世界。“创新”和“可持续发展”是Enel业务战略的核心理念，充分体现了Enel的Open Power愿景。Open Power意味着开放能源让更多的人受益、开发新能源技术、开拓新的能源管理方式、开辟能源使用新途径以及开展更多的合作。 | Enel now ranks 84th in the Fortune 500 list. As a multinational company, Enel has grown its business to more than 30 countries, and owns the largest global distribution grid network. As the world is facing greater challenges than ever before, Enel has the power and responsibility to change the world in a new, sustainable way. Innovation and sustainability are at the heart of Enel’s business strategy, in line with Enel’s ‘Open Power’ vision. Open Power means opening energy access to more people; opening the world of energy to new technologies; opening new ways for people to manage energy; opening new uses of energy; and opening more partnerships. |
| 无独有偶，华为也一直以来将“创新”和“开放”作为业务精髓，深深植入在ICT解决方案中。目前，华为正与诸多行业领先的合作伙伴和客户一道共同迈向数字化转型之路。 | There is another company that has been placing innovation and openness at the heart of business strategies through its New ICT solutions. The company is Huawei, a leader on the road to digital transformation with its partners and customers. |
| “创新”和“开放”让Enel和华为两家公司一拍即合，双方选择从Enel的总部大楼开启创新之旅。 | Innovation and openness brought Enel and Huawei together. The two companies decided to do something innovative, starting at Enel’s headquarters building. |
| 为加速全球化布局、提高办公效率，Enel在全球采用桌面云、移动办公、视频会议等占用大带宽的业务。其原有的网络层次复杂、延迟大、网速慢，不仅无法满足Enel新业务的需求，还影响了Enel员工的办公效率。 | To accelerate its global presence and improve office efficiency, Enel had introduced bandwidth-consuming services such as desktop cloud, mobile office, and videoconferencing; however, its original network failed to support these new services due to complex network structure, high latency, and low network speeds. This affected employees’ office efficiency. |
| 此外，传统网络在布线复杂度、成本、耗电、空间占用、升级扩容上也存在诸多弊端。例如，语音、视频、数据业务单独布线，布线成本占园区网络总投资的80%；由于使用大量的接入交换机，除了本身需要供电外还需配备空调保持恒温，不仅造成能源消耗大，还占用很多物理空间。 | Additionally, traditional networks had some issues in cabling, costs, energy consumption, space occupation, and upgrade/capacity expansion. For example, expensive, separate cabling for audio, video, and data services costs took up about 80 percent of the total campus network investments. A large number of access switches were used, consuming much electricity and requiring an air conditioning system for cooling. This not only resulted in large energy consumption but occupied much valuable physical space. |
| Agile POL助力Enel数字化与可持续发展迈入快车道 | Agile POL Helps Enel Push Forward Sustainability and Digitization |
| POL解决方案能够提供千兆网速，在保证传输距离高达20km的同时，还具有超强的稳定性，利用一根光纤统一承载视频、数据和语音等业务，使得网络变得既简单又智能。 | A POL solution can deliver gigabit speeds up to more than 20 miles and provide video, data, and voice all in one fiber cable with security and durability, enabling a smarter network. |
| 华为Agile POL解决方案采用扁平化网络架构，由汇聚OLT、无源光网络（ODN）和光网络单元（ONU）三部分组成。Agile POL解决方案采用采用GPON Type B双归属保护，能够在网络发生故障时，确保高可靠性。业务倒换可在50ms以内完成，实现完美的用户体验。另外ODN网络能够面向未来平滑升级，实现10G PON/40G PON的平滑演进。 | Huawei’s Agile POL solution has a flat network architecture and is composed of converged OLT, passive Optical Distribution Network (ODN), and Optical Network Units (ONUs). Huawei’s POL solution uses a dual-home mechanism to ensure high network reliability in case of network failure. The switchover time is not more than 50 milliseconds, ensuring a good user experience. Additionally, the ODN network is future-proof to support smooth evolution of 10G PON/40G PON. |
| 新网络让Enel总部大楼的网速从100Mb/s提高到700Mb/s，大幅度提升了Enel云和移动业务体验，提高了办公效率。 | With the new network, Enel increased network speed from 100 Mbit/s to 700 Mbit/s. The resulting benefits include better user experience with cloud and mobile services and higher OA efficiency. |
| 根据Enel公司发布的“2017-2019年战略规划”，未来三年，Enel公司将重点关注数字化和客户。Enel公司认为，数字化将帮助人们在日常活动中变得更加环保。譬如，会议直播、移动办公、运营团队使用GPS跟踪工具以及通过无人机监控网络和系统等一系列创新举措，将极大地减少二氧化碳排放。据统计，在2015年的前9个月里，Enel公司共举行了421次智真会议，累计减小4,815吨二氧化碳排放。 | Based on Enel’s 2017-2019 enhanced strategic plan, it will focus on digitization and customers. Enel thinks that digitization would help people become more environmentally conscious in everyday activities: live streaming of meetings and conventions, mobile work, GPS tracking tools for operational teams, and drones to monitor networks and systems — a series of innovations that allows users to cut down on CO2 emissions. For example, 421 telepresence meetings were held in Enel during the first nine months of 2015, avoiding the emission of 4,815 tons of CO2. |
| 用智慧旅游撬起智慧之城敦煌智慧城市建设摆脱了“依靠政府、依靠财政”的老思路，探索出“公司化、社会化运营”的新模式，积极引入社会资本，盘活城市资源。“做智慧城市一定要找个主攻方向。”孙晓强表示，通过主攻方向以产业化和顶层设计把其他所有行业资源统一梳理、整合、共享。敦煌选择的主攻方向是智慧旅游，“敦煌找到了一个支点，以智慧旅游撬起一座智慧之城。有了这套理念，我们就可以做到四两拨千斤。”去敦煌旅游的人都有这样的体会，除了能够感受到深厚的文化底蕴和奇特的自然风光外，还能感受到旅游过程中的秩序井然和便捷服务。即使是在旅游旺季，体验到的也是美景，而非拥挤的人群。但对敦煌城市管理者而言，旅游旺季时，大量客流对文物保护和游客安全提出了严峻挑战，淡季时则面临大量旅游资源的浪费。孙晓强表示，“所有ICT基础设施、营销体系，以及城市管理、公共安全、交通规划都要以智慧旅游为‘发动机’进行推进。最终目标是实现游客智慧服务供给、景区智慧管理以及旅游目的地的全面营销，推动丝绸之路旅游资源共享，以及区域经济的均衡发展，将公共服务扩展到整个智慧城市建设。”这一系列的建设措施，使得敦煌在2016年11月的第六届全球智慧城市博览会上，荣获“智慧城市提名奖”，并成为中国第一个在智慧城市领域获得该国际大奖的城市。这充分肯定了敦煌在智慧城市建设以及推广丝绸之路旅游发展方面做出的重要贡献。全球智慧城市博览会是目前全世界规模最大的智慧城市主题展会，由西班牙政府、世界银行等共同组织发起，在全世界享有极高的声誉。智能新体验无处不在敦煌智慧旅游新模式下，游客可线上预定各大景区门票，凭二维码快速进入景区。以鸣沙山月牙泉景区为例，网络售票数达到总售票数的35%以上；云终端门禁系统让游客可以通过二维码、身份证、人像、指纹等多种手段进出景区；指纹识别还实现了电子票务和一票多次入园的功能。这些数字化手段，使得鸣沙山月牙泉景区2017年的游客接待数突破200万人，游客满意度超过96.5%。敦煌还在旅游景区安装先进的综合视频报警系统和游客流量监控系统，逃票行为会被“电子桩”记录并由门禁系统自动识别。视频监控系统能起到保护游客生命安全的作用，甚至可以及时发现中暑游客，在夏季鸣沙山地表温度达60度的时候及时救助，实现“急救白金十分钟”。此外，景区的指纹录入系统帮助有关部门完善本地居民和外来游客的指纹数据库，为当地安保工作提供支持。敦煌已在市内43家酒店、大剧院、旅游景区等游客聚集区域实现了Wi-Fi全覆盖。孙晓强解释，“我们按照游客停留十分钟为标准，进行Wi-Fi布点。游客进入敦煌之后，只需一次认证，Wi-Fi信号一直跟随，极大提升了游客的线上体验。”由此，敦煌还推出了互动游览、手机客户端服务，为游客提供景点介绍、电子地图、自主导览、语音讲解服务，实现了把“导游装进手机里”。景区虚拟全景展示系统把名胜古迹虚拟化、数字化、网络化，方便游客更早、更快地了解景区。大数据能力代表着城市的“智商”，是智慧旅游运营的关键。敦煌通过与华为合作建设大数据分析平台，对各景区旅游资源实时管控，获取淡旺季游客特征模型，进行精准营销。通过数字渠道推送景区相关旅游信息，能够提升淡季游客人数，优化游客特征模型，共享区域旅行数据信息，实现可持续发展。在鸣沙山月牙泉景区，大数据分析平台显示：2017年4月19日起，每日游客人数均突破3000人大关，比上一年度提前34天，旅游旺季累计延长了112天。据此，大数据平台可以向游客更好地匹配周边旅游资源，使阳关、玉门关、雅丹等敦煌西线景区在2017年接待游客数同比增长15.78%。孙晓强说：“大数据平台显示，2017年敦煌团队旅游占比不到10%。进入敦煌的游客有90%是散客，其中60%是自驾游。针对自驾游游客的特定需求，如车辆租赁、旅游产品打包、旅游景区自由组合、落地即需服务、异地还车等相关数据的分析，我们得以提供更好的私人定制化服务，极大提升了游客满意度。”文化保护有了更多手段众所周知，庞大且持续增长的客流量，令一些热门景区在文物保护、古建维护、游客安全等方面承受着巨大压力，常用的解决方案是限制流量，这虽然能在一定程度上保护文化遗产，却会影响游客的旅行体验。而科技手段的不断更新，为这种困境找到了出路。敦煌对旅游资源的保护也实现了“智能化”，即采用无线传感器等网络技术，对莫高窟、玉门关、汉长城等文化遗址遗存本体及外围风沙、水文、气象、病害等影响文物存续的因素，进行实时监测、预警和管理，实现了对文物本体由抢救性保护到预防性保护的转变。目前，敦煌已建成旅游大数据库，并全面共享，比如敦煌学研究论著、敦煌手稿文献、敦煌石窟内容总录等23个数据库，收集到20多万篇相关资料，初步形成了集敦煌文化保护、研究、弘扬为一体的传播体系。敦煌还建立了非遗数据库，对市域内53项非物质文化遗产名录体系、传承人体系、音像手稿资料体系等进行了数字化。以莫高窟为例，敦煌研究院对石窟进行了全面的数字化信息采集、加工和存储，将获得的数据和文献数据汇集起来，构建多元化、智能化的石窟文物数字资源库，并通过互联网向全球推广。游客足不出户就能在线感受到敦煌石窟的魅力，大大缓解了旺季游客剧增对莫高窟文物造成的压力。借助智慧管理预约体系，莫高窟将从前一天两三万人的参观量减至六千，也减小了对壁画的不良影响。“对洞窟内湿度、温度、二氧化碳浓度、游客数、交通接驳的密度等数据的监测，我们可以决定洞窟的开放时间和数量，这是对文化遗产的有效保护。”孙晓强说，“智慧敦煌所做的是有益的探索，也是伟大的进步。”搭平台，促产业发展大数据平台是新型智慧城市建设的根本，其开放性和普适性在很大程度上决定了功能的创新性、应用开发的效率等。与此同时，更加复杂、大数据量、时效性更高的分析功能，更复杂的管理需求，以及智慧城市生态圈的整合等，也对平台的性能提出了更高的要求。孙晓强解释，“在选择设备厂商时，我们首先考虑的是统一硬件标准和高可靠性，华为能满足我们的需求。在软件方面，我们认为应该是开放的，智慧旅游和智慧城市是开放共享的生态体系。这与华为一直倡导的‘被集成’理念和打造合作共赢的生态圈的想法不谋而合。”依托华为云计算技术构建的飞天云数据中心，敦煌搭建了智慧敦煌统一基础平台，包括数据共享平台、视频共享平台、地理信息平台、大数据分析平台，能够统一承载智慧旅游、智慧家庭、智慧交通、政务服务等智慧应用，助力智慧敦煌的管理信息化、服务智能化、体验个性化。孙晓强指出，“通过生态圈进一步推动产业规划，让智慧城市成为一个能够自我造血、自我演进的有机体。”敦煌的智慧旅游辐射带动效益巨大，盘活了租车、酒店、土特产销售等市场，带动了本地第一、第三产业的增收。孙晓强说，“智慧旅游让敦煌的所有元素活起来了，但还要走出去。未来要让敦煌的智慧实践面向甘肃、面向丝路推广和复制。”“如果说智慧敦煌1.0是‘以智慧旅游引领产业型智慧城市’，智慧敦煌2.0将以‘文化敦煌’为核心。”孙晓强解释，“游客来了，重大投资项目也随之而来，产业由此兴盛。在此之后，智慧敦煌的发展潜力则是其深厚的文化底蕴。敦煌有人类文明基因库，基因库就可数据化，通过对数据进行整合、研究、挖掘和加工，又将带动新一轮的创意、孵化、贸易、设计、加工、物流、金融、结算等产业发展。智慧敦煌的品牌得以创造，标准得以缔造，发展潜力无穷无尽。” | Doing more with lessTo build a sustainable smart city, DSTC moved away from “the old way of thinking of relying on government and finance,” states Sun. Instead, he says, the company explored a new corporate and social model that combines social capital and city resources. Sun believes that a focus on economic development and top-level planning makes it possible to unify, integrate, aggregate, and share all industry resources. “Under this concept, we’ve achieved a great deal with relatively few resources,” he says.Today, visitors to Dunhuang enjoy a smooth tourist experience and convenient services that lets them experience the scenery rather than large crowds, even during peak season. Yet city leaders still face challenges. During the high season, masses of tourists are a threat to historical sites and visitor safety, while in the off season resources for tourism are woefully underused.According to Sun, “Smart tourism should be the engine that propels all of Dunhuang’s ICT infrastructure, marketing systems, urban management, public safety, and transportation planning. Our goal is to provide smart tourism services, enable the smart management of scenic areas, and fully market tourist destinations.” Sun believes that this will provide the springboard for sharing resources along the Silk Road, which will in turn boost the regional economy and extend smart city infrastructure so it covers all public services.Smooth and smartUnder Dunhuang’s new smart tourism model, tourists can book tickets for major scenic spots online and enjoy fast entry using QR codes. At the Mingsha Hill and Crescent Spring scenic areas, for example, online sales account for 35 percent of total ticket sales. A cloud terminal access management system allows visitors to enter and leave the area using a variety of methods, including QR codes, identity cards, facial recognition, and fingerprints. Fingerprint recognition technology has also been applied to electronic ticketing and multiple-entry tickets. As a result of the increased convenience, the two sites clocked up more than 2 million visits in 2017 and tourist satisfaction levels exceeded 96.5 percent.Advanced video alarm systems and visitor flow monitoring systems are installed at tourist attractions to catch ticket evaders through electronic access poles. At the same time, a video surveillance system helps protect the lives and safety of sightseers. For example, in summer when surface temperatures at Mingsha Hill hit 45 degrees, the system can detect people suffering from heat stroke and enable first-aid to occur in the critical 10-minute window. DSTC ensures full Wi-Fi coverage in high tourist traffic areas, which spans 43 hotels, theaters, and other attractions across the city. As Sun explains, “We’ve distributed Wi-Fi based on tourists stopping for ten minutes as standard. Visitors to Dunhuang only need to authenticate once and the Wi-Fi signals follow them,  which greatly improves their online experience.” DSTC also launched a mobile tour guide service for visitors, complete with interactive tours and mobile phone client services. The service provides info on attractions, electronic maps, navigation, and audio guides. In a virtual panorama display system, places of interest are virtualized, digitized, and connected, letting visitors quickly understand the area before they arrive.The big data brainBig data analytics is the brain of a smart city and the key to running a smart tourism system. DSTC worked with Huawei to build a big data analytics platform that manages and controls tourism resources in scenic areas in real time. It can generate tourist traffic models for peak times to facilitate precision marketing. By distributing information about tourist attractions across digital channels, DSTC has increased visitor numbers in the low season, optimized visitor traffic models, and shared regional travel data with other organizations, boosting the sustainable development of the tourism sector.In the Mingsha Hill and Crescent Spring areas, the big data analytics platform revealed that visitor numbers exceeded the 3,000-a-day mark 34 days earlier than the previous year and that the tourist peak season was extended by 112 days. Based on this information, the big data platform could better match tourist resources in the surrounding areas to visitors. This boosted 2017 visitor numbers to scenic spots west of Dunhuang by 15.78 percent year-on-year.Sun explains, “The platform revealed that in 2017 group tourism accounted for less than 10 percent of visitors to Dunhuang. Ninety percent were independent sightseers, of whom 60 percent come in their own cars. We’ve been able to provide customized services to meet the specific needs of tourists with cars, including vehicle hire and package tours. You can build your own sightseeing passes, on-demand arrival services, and arrange car return to different locations.”Protecting history and sharing resourcesMassive tourist numbers can negatively impact historical sites and in some cases compromise tourist safety. A common solution is to restrict visitor traffic, but this negatively impacts user experience as well as the local economy.For Dunhuang, getting smart was the answer. Wireless sensors and other networking technologies are used for real-time monitoring, early warnings, and managing potentially damaging environmental factors such as sandstorms, floods, bad weather, and animals. And Dunhuang is home to some incredibly important sites that require protection, including the Mogao Caves, which according to UNESCO is acclaimed as “the world’s greatest discovery of ancient Oriental culture,” and the 2000-year-old Jade Gate, which served as a pass in the Han Dynasty’s Great Wall. New technologies have transformed protection efforts from salvage-based to preventative-based – a great win for cultural heritage.DSTC has built up an extensive big data tourist resource pool that it shares with other stakeholders. It comprises 23 databases containing over 200,000 data points covering the Dunhuang manuscripts, the Mogao Caves, and research on Dunhuang. This has formed an initial, integrated system for sharing information that can help with cultural protection, research, and the promotion of Dunhuang. DSTC has also set up an intangible heritage database. This contains a digitized directory of 53 items of intangible cultural heritage, an inheritor system, and an AV manuscript information system.Supplementing physical visits to sites like the Mogao Caves with an online experience that people can enjoy at home is an effective way to relieve pressure on sites caused by tourist surges during peak season. Thanks to a smart booking management system, the number of visitors to the Mogao Caves is forecast to drop from 30,000 to 6,000 a day, reducing the chance of potential damage to the site’s murals. “We’re able to determine opening times and maximum number of visitors for the caves by monitoring humidity and temperature, carbon dioxide concentration, visitor numbers, and the density of transport connections,” says Sun. Tourism benefits all industriesThe big data platform is the foundation of the new smart city. The time sensitivity and complexity of the smart city ecosystem places extremely high requirements on the performance of big data analytics platforms. Openness and universality are also essential, explains Sun, “When selecting equipment manufacturers, we first considered unified hardware standards and high reliability. Huawei was able to meet our needs. As for software, we believe that it should be open. Smart tourism and smart cities are open, shared ecosystems.”The Feitian Cloud Data Center is Smart Dunhuang’s unified foundation platform. Built using Huawei’s cloud computing technology, the platform features solutions for data sharing, video sharing, geographic information, and big data analysis. It carries smart applications for travel, homes, transportation, government, management, and services, and features capabilities for personalized visitor experiences. According to Sun, “We can promote industrial planning through the ecosystem to help the smart city become a self-developing and evolving organism.” Indeed, Dunhuang’s smart tourism has brought huge benefits to the region, revitalizing the car rental and hospitality sectors, and boosting local primary and secondary industries. “Smart tourism has brought to life all of Dunhuang’s different elements,” says Sun. “But we must go further. We need to extend and replicate what we have done in Dunhuang to achieve smart tourism in Gansu and along the Silk Road.”Dunhuang was nominated for a Smart City Award at the 6th Smart City Expo World Congress (SCEWC) in November 2016, becoming the first Chinese city to become a nominee for this international award. Set up by the Spanish government, the World Bank, and other organizations, SCEWC is the world’s leading smart city expo, and Dunhuang’s nomination testifies to successes in planning, strategy, and execution.“Smart Dunhuang 1.0 is ‘an industry-focused smart city led by smart travel’ and Smart Dunhuang 2.0 will have ‘cultural Dunhuang’ at its core,” explains Sun. “After the tourists arrived, major investment projects followed and industry flourished. Dunhuang’s profound cultural heritage is the next potential area of development for Smart Dunhuang. Dunhuang has a rich repository of human civilization and culture that can be digitized.” He believes that integrating, researching, mining, and processing this data will lead to the development of a new wave of industries, including innovation, incubation, trade, design, processing, logistics, finance, and settlement. “By creating a brand and standards for Smart Dunhuang, the potential for development is unlimited,” he says |
| 用智慧旅游撬起智慧之城敦煌智慧城市建设摆脱了“依靠政府、依靠财政”的老思路，探索出“公司化、社会化运营”的新模式，积极引入社会资本，盘活城市资源。“做智慧城市一定要找个主攻方向。”孙晓强表示，通过主攻方向以产业化和顶层设计把其他所有行业资源统一梳理、整合、共享。敦煌选择的主攻方向是智慧旅游，“敦煌找到了一个支点，以智慧旅游撬起一座智慧之城。有了这套理念，我们就可以做到四两拨千斤。”去敦煌旅游的人都有这样的体会，除了能够感受到深厚的文化底蕴和奇特的自然风光外，还能感受到旅游过程中的秩序井然和便捷服务。即使是在旅游旺季，体验到的也是美景，而非拥挤的人群。但对敦煌城市管理者而言，旅游旺季时，大量客流对文物保护和游客安全提出了严峻挑战，淡季时则面临大量旅游资源的浪费。孙晓强表示，“所有ICT基础设施、营销体系，以及城市管理、公共安全、交通规划都要以智慧旅游为‘发动机’进行推进。最终目标是实现游客智慧服务供给、景区智慧管理以及旅游目的地的全面营销，推动丝绸之路旅游资源共享，以及区域经济的均衡发展，将公共服务扩展到整个智慧城市建设。”这一系列的建设措施，使得敦煌在2016年11月的第六届全球智慧城市博览会上，荣获“智慧城市提名奖”，并成为中国第一个在智慧城市领域获得该国际大奖的城市。这充分肯定了敦煌在智慧城市建设以及推广丝绸之路旅游发展方面做出的重要贡献。全球智慧城市博览会是目前全世界规模最大的智慧城市主题展会，由西班牙政府、世界银行等共同组织发起，在全世界享有极高的声誉。智能新体验无处不在敦煌智慧旅游新模式下，游客可线上预定各大景区门票，凭二维码快速进入景区。以鸣沙山月牙泉景区为例，网络售票数达到总售票数的35%以上；云终端门禁系统让游客可以通过二维码、身份证、人像、指纹等多种手段进出景区；指纹识别还实现了电子票务和一票多次入园的功能。这些数字化手段，使得鸣沙山月牙泉景区2017年的游客接待数突破200万人，游客满意度超过96.5%。敦煌还在旅游景区安装先进的综合视频报警系统和游客流量监控系统，逃票行为会被“电子桩”记录并由门禁系统自动识别。视频监控系统能起到保护游客生命安全的作用，甚至可以及时发现中暑游客，在夏季鸣沙山地表温度达60度的时候及时救助，实现“急救白金十分钟”。此外，景区的指纹录入系统帮助有关部门完善本地居民和外来游客的指纹数据库，为当地安保工作提供支持。敦煌已在市内43家酒店、大剧院、旅游景区等游客聚集区域实现了Wi-Fi全覆盖。孙晓强解释，“我们按照游客停留十分钟为标准，进行Wi-Fi布点。游客进入敦煌之后，只需一次认证，Wi-Fi信号一直跟随，极大提升了游客的线上体验。”由此，敦煌还推出了互动游览、手机客户端服务，为游客提供景点介绍、电子地图、自主导览、语音讲解服务，实现了把“导游装进手机里”。景区虚拟全景展示系统把名胜古迹虚拟化、数字化、网络化，方便游客更早、更快地了解景区。大数据能力代表着城市的“智商”，是智慧旅游运营的关键。敦煌通过与华为合作建设大数据分析平台，对各景区旅游资源实时管控，获取淡旺季游客特征模型，进行精准营销。通过数字渠道推送景区相关旅游信息，能够提升淡季游客人数，优化游客特征模型，共享区域旅行数据信息，实现可持续发展。在鸣沙山月牙泉景区，大数据分析平台显示：2017年4月19日起，每日游客人数均突破3000人大关，比上一年度提前34天，旅游旺季累计延长了112天。据此，大数据平台可以向游客更好地匹配周边旅游资源，使阳关、玉门关、雅丹等敦煌西线景区在2017年接待游客数同比增长15.78%。孙晓强说：“大数据平台显示，2017年敦煌团队旅游占比不到10%。进入敦煌的游客有90%是散客，其中60%是自驾游。针对自驾游游客的特定需求，如车辆租赁、旅游产品打包、旅游景区自由组合、落地即需服务、异地还车等相关数据的分析，我们得以提供更好的私人定制化服务，极大提升了游客满意度。”文化保护有了更多手段众所周知，庞大且持续增长的客流量，令一些热门景区在文物保护、古建维护、游客安全等方面承受着巨大压力，常用的解决方案是限制流量，这虽然能在一定程度上保护文化遗产，却会影响游客的旅行体验。而科技手段的不断更新，为这种困境找到了出路。敦煌对旅游资源的保护也实现了“智能化”，即采用无线传感器等网络技术，对莫高窟、玉门关、汉长城等文化遗址遗存本体及外围风沙、水文、气象、病害等影响文物存续的因素，进行实时监测、预警和管理，实现了对文物本体由抢救性保护到预防性保护的转变。目前，敦煌已建成旅游大数据库，并全面共享，比如敦煌学研究论著、敦煌手稿文献、敦煌石窟内容总录等23个数据库，收集到20多万篇相关资料，初步形成了集敦煌文化保护、研究、弘扬为一体的传播体系。敦煌还建立了非遗数据库，对市域内53项非物质文化遗产名录体系、传承人体系、音像手稿资料体系等进行了数字化。以莫高窟为例，敦煌研究院对石窟进行了全面的数字化信息采集、加工和存储，将获得的数据和文献数据汇集起来，构建多元化、智能化的石窟文物数字资源库，并通过互联网向全球推广。游客足不出户就能在线感受到敦煌石窟的魅力，大大缓解了旺季游客剧增对莫高窟文物造成的压力。借助智慧管理预约体系，莫高窟将从前一天两三万人的参观量减至六千，也减小了对壁画的不良影响。“对洞窟内湿度、温度、二氧化碳浓度、游客数、交通接驳的密度等数据的监测，我们可以决定洞窟的开放时间和数量，这是对文化遗产的有效保护。”孙晓强说，“智慧敦煌所做的是有益的探索，也是伟大的进步。”搭平台，促产业发展大数据平台是新型智慧城市建设的根本，其开放性和普适性在很大程度上决定了功能的创新性、应用开发的效率等。与此同时，更加复杂、大数据量、时效性更高的分析功能，更复杂的管理需求，以及智慧城市生态圈的整合等，也对平台的性能提出了更高的要求。孙晓强解释，“在选择设备厂商时，我们首先考虑的是统一硬件标准和高可靠性，华为能满足我们的需求。在软件方面，我们认为应该是开放的，智慧旅游和智慧城市是开放共享的生态体系。这与华为一直倡导的‘被集成’理念和打造合作共赢的生态圈的想法不谋而合。”依托华为云计算技术构建的飞天云数据中心，敦煌搭建了智慧敦煌统一基础平台，包括数据共享平台、视频共享平台、地理信息平台、大数据分析平台，能够统一承载智慧旅游、智慧家庭、智慧交通、政务服务等智慧应用，助力智慧敦煌的管理信息化、服务智能化、体验个性化。孙晓强指出，“通过生态圈进一步推动产业规划，让智慧城市成为一个能够自我造血、自我演进的有机体。”敦煌的智慧旅游辐射带动效益巨大，盘活了租车、酒店、土特产销售等市场，带动了本地第一、第三产业的增收。孙晓强说，“智慧旅游让敦煌的所有元素活起来了，但还要走出去。未来要让敦煌的智慧实践面向甘肃、面向丝路推广和复制。”“如果说智慧敦煌1.0是‘以智慧旅游引领产业型智慧城市’，智慧敦煌2.0将以‘文化敦煌’为核心。”孙晓强解释，“游客来了，重大投资项目也随之而来，产业由此兴盛。在此之后，智慧敦煌的发展潜力则是其深厚的文化底蕴。敦煌有人类文明基因库，基因库就可数据化，通过对数据进行整合、研究、挖掘和加工，又将带动新一轮的创意、孵化、贸易、设计、加工、物流、金融、结算等产业发展。智慧敦煌的品牌得以创造，标准得以缔造，发展潜力无穷无尽。” | Three UK: From building capacity to sci-fi |
| 改造后的输变电网统一承载生产和办公业务，能够支持未来电力业务ALL IP发展的需要，而且保障重要业务的高可靠传输。强大的性能和灵活的扩展性可以满足未来三到五年的发展。 | After changing the power transmission and transformation network to bear production and office work in a unified manner, it is able to support future electric power business All-IP development requirements. At the same time, it will guarantee highly-reliable transmission of important business. Its powerful performance and flexible scalability can meet the development requirements for the next three to five years. |
| 在泰国，地方电力局（PEA）负责向国内和周边国家提供电力业务和相关服务，覆盖泰国74省99.98%的面积。PEA持续打造智能电网以适应多变的市场环境和激烈的商业竞争。 | In Thailand, Provincial Electricity Authority (PEA) is responsible for providing electric power and related services to Thailand and neighboring countries, covering 99.98% of Thailand's territory over 74 provinces. PEA is continuously building a smart network that adapts to the ever-changing market environment and the fierce commercial competition. |
| 泰国凭借独特的魅力每年吸引着数千万来自世界各地的游客，感受什么叫诗和远方。可以在“泰北玫瑰”清迈，慢慢游行于古城中，逛古寺庙，拜四面佛，祈求世界和平；也可以在“安达曼海上的明珠”普吉岛，享受着阳光与沙滩的馈赠，或与小鱼一同在大海中漫游。从清迈到普吉岛的直线距离约为1200km，虽然他们白天风格迥异，但夜晚都被五彩斑斓的灯火装扮得别具风情。作为泰国最大的电力公司，泰国省际电力公司（The Provincial Electricity Authority，PEA）功不可没。PEA一直致力于为消费者提供更经济、更可靠的电力服务，其电网业务覆盖泰国99.98%的国土面积，服务1700万客户，拥有512个变电站和914个office，电力传输长达10,173 cct-km，电力传输光纤资源达到24000 km。PEA不仅给本地人民及海外游客带来了丰富多彩的生活享受，也直接促进了泰国国民经济的增长。 | The Provincial Electricity Authority (PEA), Thailand's largest electric power company, plays an important role in supplying power for those lights. PEA aims to provide affordable and reliable electric power services for consumers. It serves 17 million customers in 99.98% of the area of Thailand. With 512 substations and 914 offices, PEA offers power transmission of up to 10,173 cct-km, and optical fibers of 24,000 km. PEA not only brings a colorful experience to local residents and international tourists, but also promotes Thailand's economic growth. |
| 华为在深入分析了PEA需求后，进行了大量的实验和测试，为其量身定制了融合传送解决方案。该方案通过采用定制化的网络搬迁工具、双域桥接技术、利旧网管和设备等方式顺利完成PEA输变电网络改造，助力PEA输变电网络建设迈入新的历史阶段。 | After thoroughly analyzing PEA's demands, Huawei conducted many experiments and tests to develop a unified transmission solution customized for PEA. The solution completed the upgrade of PEA's power transmission and transformation network by adopting several methods, such as customized network migration tools, dual-domain bridging technology, and reused network management and equipment. With this solution, PEA's transmission and transformation network has entered a new stage. |
| 新旧网络无缝对接安全可靠，网络平滑演进 | Seamless, secure, and reliable interconnection of the old and new network with smooth network evolution |
| 软硬管道实现生产办公业务统一承载，满足未来发展 | Soft and hard pipes for unified carrying of production and office services to satisfy future development needs |
| 随着能源互联网的兴起和新能源的规模化增长，构建更加智能化的全联接电网成为大势所趋，华为也努力与PEA实现共赢。2016年，华为与PEA启动了创新中心战略合作，双方将通过深度合作，打造行业内更创新、更有竞争力的解决方案。华为泰国代表处总经理汪亦凡说到：“该创新中心是华为在全球的第一个电力行业创新中心，我们为此积极投入资源、人才和技术。未来双方将加强合作，有效促进研发实践，加速创新成果产出，实现合作共赢的目标，这也是华为积极响应和参与泰国智慧城市建设计划的重要组成部分。” | With the rise of Internet of Energy and large-scale growth of new energy, building a better connected smart grid has become a general trend. Huawei aims to achieve mutual benefits with PEA. In 2016, Huawei and PEA initiated strategic cooperation in innovation centers so that the two companies can develop innovative and competitive solutions through deep collaboration. Wang Yifan, Manager of the Thailand rep office, said: "This innovation center is Huawei's first innovation center for the electric power industry in the world. We have invested resources, personnel, and technologies. In the future, we will strengthen cooperation to effectively promote R&D practices and produce innovation results at an increasing speed to achieve a win-win collaboration. This is part of Huawei's active engagement in Thailand's Smart City construction." |
| 下次去泰国旅行时，不妨安静地欣赏一下当地的夜景，感受这背后PEA和华为做出的努力。 | Next time when you travel to Thailand, you can quietly admire local night views and think about PEA and Huawei's efforts behind them. |
| 效率、速度和时间是物流行业的重中之重。作为全球物流领军企业DHL供应链的首席信息官及首席运营官，马库斯·沃斯博士为我们解读了如何通过数字化转型和敏捷创新，持续帮助这一物流业巨头，实现其口号“卓越，只为送达”。数字达尔文主义2014年，德国邮政DHL集团宣布其未来若干年的计划：“聚焦重点、互联互通、持续成长”，将物流服务拓展至全球新兴经济体，以期从全球电子商务热潮中获取最大回报。“数字化是我们2020战略的核心主题，”沃斯博士称，“随着网上购物和电子商务的发展，物流成为人们生活的重要组成部分，所以它会对每个人的生活带来重大影响。”物理世界的数字化必然对企业造成威胁。企业要继续发展，只有立刻采取行动。世界经济论坛（WEF）的报告称物流行业市值高达1.5万亿美元，如果从现在开始数字化转型，到2025年，可以累积创造2.4万亿美元的社会价值。随着时代的变迁和消费升级，即便是一些历史悠久的公司也难逃忽略数字化转型的代价。沃斯博士提供了一组数据，让人警醒：“2000年的世界五百强公司，这些当时世界上最大的公司，有近一半已经从排行榜上消失……放眼全球，数字业务模式在各行各业颠覆并取代了原来的业务模式。”他认为竞争已经白热化，“这就是一个优胜劣汰的数字达尔文世界，如果我们不想被淘汰，就要不断向市场推出科技驱动的新业务。”传统物流系统效率低下对于很多人来说，物流行业并非高科技行业。但是现在该行业也迎来了翻天覆地的变化。WEF认为，物流行业在许多方面极其低效。比如，近一半的卡车返程时是空载，这不仅会对环境造成额外负担，也会影响公司利润。沃斯博士表示：“我们引进了无人机和机器人，代替人类的工作，速度更快，能让效率提高10%到15%。”新商业模式的基石是数字技术，使用数字技术能够削减成本，创造解决方案，提供附加服务，并且能够驱动数字化转型。沃斯博士说：“数字化意味着新的商业模式，从以往单纯的物流服务中找到新的利润点，提供新服务。”AR、VR和物联网优化效率DHL供应链是最早在日常操作中推行虚拟现实（VR）和增强现实（AR）的公司。2014年，AR实验在荷兰取得成功，随后，该公司在美国和欧洲推出了下一阶段的视觉分拣计划（Vision Picking Programme）。分拣人员配备一副智能眼镜，眼镜上会自动显示待分拣物品应放置在推车上的位置，从而解放了双手，使得订单处理速度更快，错误率更低。“这个项目的反馈非常好。我去过其中一个仓库，当时有一位工作人员的眼镜正在维修，她几乎是恳求道：‘赶紧把我的眼镜修好还给我吧！’这对我们来说是莫大的鼓励。”沃斯博士回忆道，“我相信这个项目会改变供应链的运作方式，为客户带来额外的价值。”DHL供应链正将物联网用于其仓储操作，优化效率，提高安全性。“到2020年，全世界将有500亿台联网设备。我们需要利用数字手段，追踪通过我们供应链出口的货物。物联网能够帮助我们，优化供应链操作。”沃斯博士说。他举了一个汽车生产时堆场管理的例子。每辆汽车要经过一扇门，给其打上序列号。“堆场有上百扇门，每一扇门都紧紧挨着，等待卡车进入。要安排司机在合适的时机进入正确的门非常困难。”沃斯博士称。虽然这项操作并不复杂，但是却很容易犯错。“我们和华为合作，利用窄带物联网技术给每扇门安装了传感器，这样我们就可以知道哪扇门处于空闲状态。”所有司机的手机都安装有应用，告诉他们什么时间去什么地方卸货。沃斯博士称此举“减少了司机一半的等待时间，还一举扫除了这一过程所有可能的失误。”践行社会责任WEF报告显示，物流业的污染排放量占全球13%。2017年8月，DHL宣布了一项雄心勃勃的计划，宣称要在2050年将物流污染排放量降到零。该公司已经开展一个实验项目，将电动汽车用于最后一公里配送，配送范围为70公里以内。但是DHL所需要的电动车尚未面市。所以，DHL与德国的亚琛工业大学合作开发电动车。沃斯博士称：“目前我们配备了3000辆电动车，准备将整个车队都置换成电动车，甚至打算将这些电动车销售给合作伙伴。”这些汽车配备有锂离子电池组供电的30千瓦的异步电机，最高时速可达80公里，根据载重和路况的不同，单次充电后行驶距离可达50到80公里。一次可携带650千克重物，空载重量为1500千克。DHL在陆空运输方面不断前行，让物流操作更绿色、更快捷、更顺畅。 | Efficiency, speed, and timing are the top priorities in logistics. With more than 350,000 employees operating in 220 countries and territories, DHL leads the world in logistics. Dr. Markus Voss, CIO and COO of DHL Supply Chain, explains how digital transformation can forge processes that will help the freight giant continue to deliver on its slogan: “Excellence. Simply delivered.”Digital DarwinismIn 2014, Deutsche Post DHL announced its plan for the coming years, Strategy 2020: Focus. Connect. Grow, which includes expanding its logistics services into the world's emerging markets and maximizing returns from the global eCommerce boom. “Digitalization is the key theme for us for the Strategy 2020,” says Voss. “It’s going to have a profound impact on us and everyone else’s lives because logistics is an essential part of life.”The digitalization the physical world won’t come without threats to enterprises. And those that want to prosper need to act now: The World Economic Forum (WEF) reports that US$1.5 trillion of value is at stake for logistics players, while a further US$2.4 trillion worth of social benefits will be generated from digital transformation from now until 2025. Even established companies can’t afford to neglect digital transformation. Voss offers some sobering statistics, “Look at the Fortune 500 companies, the biggest companies in the world in the year 2000 ─ half of those companies have vanished….Their business models have completely been taken over by digital business models.” He believes the competition is cut-throat, “It’s a real world of digital Darwinism out there. If we don’t want to lose out, we have to constantly put new technology-enabled services out into the market.”Legacy inefficiencyLogistics may not be seen as cutting-edge to many, but sweeping changes are descending on the supply chain. The WEF holds that the logistics industry is woefully inefficient in many areas; for example, 50 percent of trucks travel empty on their return journeys, an unnecessary burden on the environment as well as bad for a company’s bottom-line. Voss explains, “We have a number of examples of introducing drones and robots. They essentially do the same thing as we do right now, but they just do it faster, work collaboratively with our workers, and help drive up efficiency by 10 to 15 percent.”New business models underpinned by digital technologies and the aims of reducing cost, creating solutions, and offering value-added services are driving digital transformation. According to Voss, “Digitalization means new business models…new ways of commercializing and driving something that used to be pure logistics, and offering new services.” AR, VR, and IoTDHL Supply Chain is one of the first companies to widely implement augmented reality and virtual reality into its daily operations. With a successful AR trial in the Netherlands in 2014, DHL Supply Chain has rolled out the next phase of its Vision Picking Program in the US and Europe. Pickers are equipped with smart glasses that visually display where each picked item needs to be placed on the trolley. Vision Picking enables hands-free orders at a faster pace and lower error rates, “The feedback is just phenomenal. I’ve just been at one of warehouses. The workers’ glasses were on maintenance. She was literally crying, ‘Give me my glasses back.’ So that’s very encouraging for us,” recalls Voss. “We believe this program is a game-changer in how we run our supply chain operations and deliver added value to our customers.” DHL Supply Chain is applying IoT into its warehousing operations to optimize efficiency and make work safer. “By 2020, there will be 50 billion connected devices. And we need to trace our goods that we’re exporting through the supply chain with a digital mirror. IoT enables us to optimize the supply chain,” says Voss. He gives a specific example of yard management in car manufacturing, which requires manufactured cars to be sequenced at the door. “There are hundreds of doors, literally next to each other where trucks need to arrive. This is a problem to organize — telling the right driver when to go to which door,” Voss explains. While not a sophisticated operation, it’s extremely error-prone. “What we’ve done with Huawei is use their NB-IoT technology to equip all doors with a sensor that tells us if the door is currently empty.” All drivers have a mobile app that tells them when and where to go, which Voss says “has reduced the waiting time of drivers by 50 percent and taken all errors out of the process.”Socially responsibleAccording to the WEF, logistics produces 13 percent of all global emissions. In August, DHL announced the ambitious plan of reducing its logistics emissions to zero by 2050. One pilot project that’s already in play is deploying electric vehicles for last-mile delivery, or more accurately specifically over a 70-km radius. However, the type of vehicle DHL needed wasn’t available in the market. So, it partnered with the University of Aachen and now, Voss reports, “We have about 3,000 electric vehicles on the roads. We intend to electrify our entire fleet, and we’re even selling these vehicles to our partners.” Powered by 30-kW asynchronous electric motors fed by lithium-ion battery packs, the vans have a top speed of 80 km/h and an in-service range of 50 to 80 km between charges, depending on load mass and driving conditions. They can carry up to 650 kg of load at a time, and weigh about 1,500 kg empty.DHL is on the road – and in the sky – to making its operations greener, faster, and smoother than ever before. |
| 智能联接：融合5G、人工智能和物联网 | Intelligent connectivity: The fusion of 5G, AI, and IoT |
| 迪拜机场携手华为打造智慧机场 | Huawei partners with Dubai Airports to Build a Smart Airport |
| 这是一个极具挑战的数据中心项目。近年来，随着业务的快速增长、对于提升乘客体验的不懈追求以及绿色节能的社会责任，数据中心升级成为迪拜机场数字化转型的重要一环。迪拜机场现有多个老旧数据中心，设备品牌众多，管理复杂，且机房大量设备老化，制冷量不足，因此急需新建一个全新的数据中心为机场业务扩容做准备，同时尽快收纳原数据中心业务。新数据中心规划了共计100个业务柜，单机柜10 kW/rack。迪拜机场为了确保数据中心的可靠性，要求了Tier III设计和建造双认证，并且要求1年之内完成建设；此外，单柜功率达到10 kW以及迪拜本身的高温天气都对数据中心散热带来了更大的挑战。但是，迪拜机场并没有现成的楼宇作为庞大的数据中心。鉴于对快速部署、易于扩容、节能环保等重要特性的考量，迪拜机场最终选择了华为预制模块化数据中心。 | This was, in fact, a very challenging data centre project. In recent years, driven by the rapid business growth, the eternal pursuit of a better passenger experience, as well as the increasing social responsibility of eco-friendliness and energy conservation, data centres have become an important part of Dubai Airports' digital transformation. Dubai Airports had several data centres, with devices provided by many vendors, complicated management, and limited cooling capacity. A new data centre, therefore, needed to be built to further expand airport services and consolidate services of the legacy data centres. |
| 这是一个极具挑战的数据中心项目。近年来，随着业务的快速增长、对于提升乘客体验的不懈追求以及绿色节能的社会责任，数据中心升级成为迪拜机场数字化转型的重要一环。迪拜机场现有多个老旧数据中心，设备品牌众多，管理复杂，且机房大量设备老化，制冷量不足，因此急需新建一个全新的数据中心为机场业务扩容做准备，同时尽快收纳原数据中心业务。新数据中心规划了共计100个业务柜，单机柜10 kW/rack。迪拜机场为了确保数据中心的可靠性，要求了Tier III设计和建造双认证，并且要求1年之内完成建设；此外，单柜功率达到10 kW以及迪拜本身的高温天气都对数据中心散热带来了更大的挑战。但是，迪拜机场并没有现成的楼宇作为庞大的数据中心。鉴于对快速部署、易于扩容、节能环保等重要特性的考量，迪拜机场最终选择了华为预制模块化数据中心。 | The new data centre was designed to have 100 service cabinets, with up to 10 kW/rack in a single cabinet. To ensure high reliability, Dubai Airports expected to build the world's first Modular Data Centre Complex (MDCC) within a year that will be certified by the Uptime Institute to Tier III for design and construction. The 10 kW/rack power density requirement, plus the extremely high temperatures in Dubai, posed a greater challenge to heat dissipation; however, an appropriate building to house such a large MDCC wasn’t readily available. After thoroughly considering quick deployment, easy capacity expansion, energy conservation, and other important features, Dubai Airports chose Huawei's prefabricated modular data centre solution. |
| 从1960年至今，迪拜机场已经成为世界一流机场，是全球第一大国际客运、物流中转中心。 | Since it opened in 1960，Dubai International is now one of the busiest international airports in the world. |
| 智能联接：融合5G、人工智能和物联网 | Intelligent connectivity: The fusion of 5G, AI, and IoT |