創新
Innovation

In the highly competitive telecommunications business environment, if the enterprise does not commence timely action on innovation , it will not only affect the staff loyalty and the consumer perception of the enterprise but also impact the long-term value.

In response to the forward-looking long-term development of innovation, Chunghwa Telecom not only improves the efficiency of its R&D resource, but also enhances the synergy with the external R&D institutions to actively improve the processes and product innovation for the better of the society and the environment.

To cope with climate change is an external drive for innovation, Chunghwa Telecom in recent years focus its innovation on technology in order to extend its new market positioning, and to reduce business risks and operating costs. In addition, Chunghwa Telecom follows the laws and regulations to enhance reputation and legitimacy of the practice for enterprises to increase new market opportunities, expand product diversity, and enhance brand value and reputation

Innovation

Stakeholder

Investors/ shareholders, government, business partners, global environment

Voices | Through innovation, the future of human beings can be better

Commitment | Becoming the benchmark corporation in innovation in the country

Index Category		2008 Commitment	2009 Implementation	2010 Target	Page
Benchmark Index	Have the highest R&D-revenue ratio in the Telecom Service industry	To be reached	3.2 billion NTD	remain leading	P24
Awards won	• Ministry of Economic Affairs "Industrial Technology Advancement Award-Outstanding Innovation Award" • Ministry of Economic Affairs "National Invention and Creation Award-Contribution Award" • Bureau of Standards, Metrology & Inspection (M.O.E.A.) "10th National Standardization Award -Company Standardization Award " • "7th Golden Map Award-Best Application System"-digital duty control and management system for the Police Department • Cite Publishing "Top Ten Science & Technology Award – Golden Award in Annual Product Innovation, Golden Award in Mobile Communications" • "2009 IT Month: Outstanding INFO Application and Product Award" and "2009 Linux Golden Penguin Award"-Open Telematics service platform-InfoQ • "2009 TM Forum Best Practices Award-service provider"-NGOSS Evolution Project				

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Environmental Sustainability

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Management Elevating Innovation's Efficiency

Understanding the trends in the industry and performing innovation and R&D are the driving forces for business growth. Even though we were facing great challenges from the downturn of the global finance in 2009, we still invested close to 3.2 billion NTD, the same amount as 2008, on R&D for continuous innovation workflow improvement. The investment accounted for 1.71% of the company's revenue of the year. Our R&D scale was the largest among our peers in Taiwan.

Enhance the Efficiency of R&D Resources

We strive to improve the efficiency of our R&D resource and to maintain the quality of our R&D system's. Apart from setting up the Quality Promotion Working Group (QP), Quality Assurance Center (QAC) and Engineering Process Group (EPG) under the Chunghwa Telecom Telecommunication Laboratories (CHTTL), we also introduced international regulations and organizational audit systems such as ISO quality management system, CMMI(Capability Maturity Model Integration)-based Project Management System (CPMS), several R&D process improvement activities for standardization. All these efforts are to enable high level management to manage audit activities, enhance their project management capability, improve products quality, fine-tune R&D quality and raise employees' quality awareness.

To efficiently and actively integrate the resources from CHTTL and our operational units and to grasp every business opportunity, the Laboratories have set up service stations both in Taipei and Kaohsiung to bring the collective power of R&D and marketing to a full play.
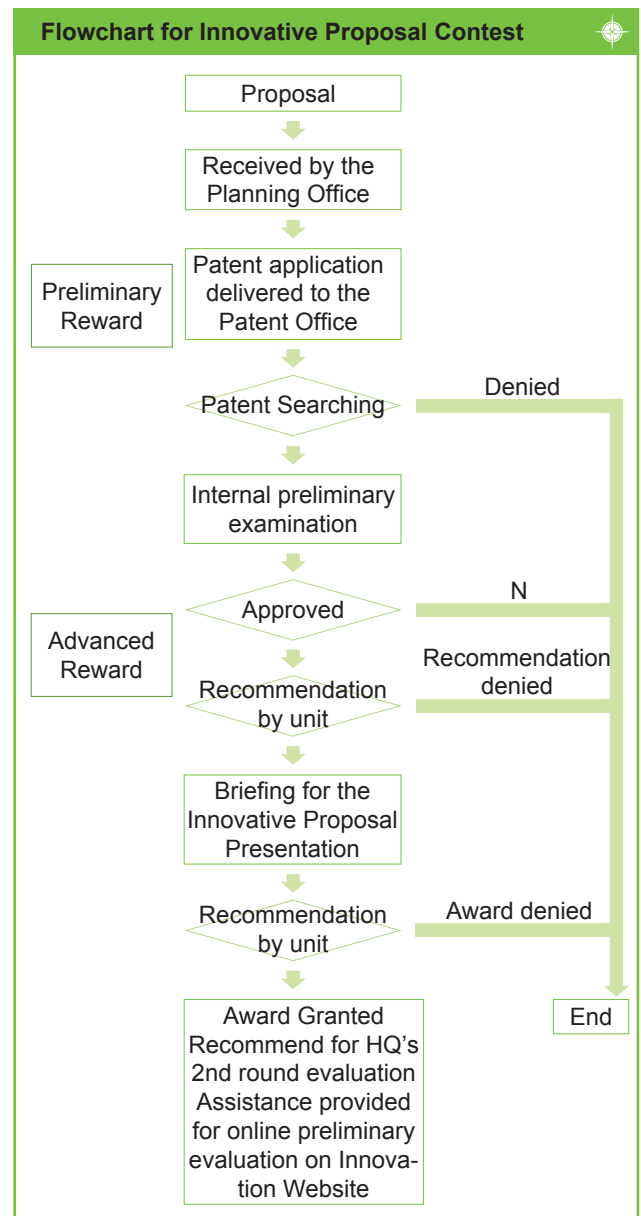
Enhance Joint Innovation with External Forces

We were the pioneers to venture to the Long Term Evolution (LTE): 4G. We developed a "LTE Trial Network" along with Ericsson which will enable Taiwan to keep its competitiveness during ICT industry's transformation to the next generation of mobile broadband services.

In November 2009, we singed a Cloud Computing Strategic Alliance MOU with Microsoft. In the future, we will collaborate with each other regarding cloud computing services and facilities and software applications at the user end. We hope that this new operation model can open up more cloud computing-based business opportunities for both companies.

In terms of Smart Grid Technology, Chunghwa Telecom plans to have the 23,000 users of the industrial high voltage (11000 V) whose usage accounts for 50% of the total electricityin Taiwan completed the switching to Smart Meter by 2012. To achieve this goal, we are currently working with Tatung Co. to develop Smart Meters. Tatung Co. is in charge of the development of the hardware whilewe focus on the the development of wireless data transmission. Smart Meters are currently being tested in small areas. It is our desire to continue being the pioneer and the leader in the field of Smart Grid for the future.

Innovation that Benefits the Society and the Environment

Innovative products and services that focus on the environmental protection and the social issues-solving will be crucial to a companyto compete globally in the future. As the leader of the industry bearing a mission on CSR, we already made environmental and social innovation the core mission of our future R&D strategies. We will invest our resources in a well-planned matter so as to benefit the society, the environment and the company.

Flowchart for Innovative Proposal Contest

Proposal → Received by the Planning Office → Patent application delivered to the Patent Office → Preliminary Reward

Patent Searching → Denied

Internal preliminary examination

Approved → N

Advanced Reward → Recommendation by unit → Recommendation denied

Briefing for the Innovative Proposal Presentation

Recommendation by unit → Award denied → End

Award Granted Recommend for HQ's 2nd round evaluation Assistance provided for online preliminary evaluation on Innovation Website

Management Extension of Innovation Engagement

Facing the constant change of telecommunication applications, diversified life experiences are the source of innovation. In addition to our own R&D departments and external technological partners, we welcome college students and everyone in the company to engage R&D activities and offerR&D positions and opportunity to start-up new business internally to bring R&D results to a full play.

Chunghwa Telecom Application Contest

In 2003, we started to host the "Telecommunications Value-adding Application Contest" for college students. It is now seen as the Oscar Award in the telecommunication field. Every year, the contest attracts more than 2000 teams to participate. Upon to the 7th year (2009), the total number of participants has already exceeded 17,000.

The 2009 Telecommunications Value-adding Application Contest was divided into 5 groups: "Broadband Value-adding Group", "3G Mobile Life Application Group", "3G Campus Mobile Application Group", "Fixed-network Value-adding Group" and "ICT Application Group". We took this opportunity to recruit the talents from participating teams to join us in our R&D branches and CHTTL.

In the future, we will continue to tie the topic of the contest closely to our businesses and continue to invite more and more students with different backgrounds to participate the contests. For example, in 2010, we plan to add another group, "Integrated Marketing Group" for business school students.

Internal Employee Business Starting

In addition to educational training, we also encourage our employees to start their businesses within the company. Currently, Chunghwa Leading Photonics Tech (CLPT) has been evaluated and approved internally to carry our enterprise incubation under CHTTL.

The team utilizes CHTTL's Optical Transceiver Module manufacturing facilities to develop a new generation of Short-wave Infrared Imaging Module while at the same time devotes itself to enhance the technologies for the industry. So far, products are on a trial sale to European nations and the team has been working with European equipment manufacturers to develop environmental protection-related applications such as solar panel crack inspection or waste classification inspection. At the moment, the team is seeking investments from relevant industries in hope to bring theR&D results to life as a product and to truly accomplish the value-adding application on technology and service.

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Address eICT Innovation

eICT is the perfect demonstration of our innovative vision. Looking into the future development of the ICT industry, we know that in-depth R&D and new applications are not enough. All the technology and development will be tightly connected to sustainable operation and corporate responsibility. Therefore, we revisited our innovative R&D missions and laid down three Es with communication technology as the foundation and information technology for the path of development. The three Es are as follows.
1. Energy: Use renewable energy and reduce energy consumption.
2. Environment: Reduce the amount of resource used and monitor changes in our environment.
3. Empower: Care for the disadvantaged groups and provide assistance to social development.

CT Communication Technology

Lately, we reached the following three kinds of achievements in CT R&D:
1. Full integration of wireless landline and broadband internet access system. Our goal is to provide broadband access to ever village.
2. Improvement of the service quality of wired/wireless communication systems.
3. Introduction and establishment of the mobile satellite system.

Mobile Satellite System ◎

In response to the Ministry of the Interior's policies of establishing a rescue and disaster relief mobile satellite system, and to solve the communication difficulties in rural areas, at sea, in mountain areas or disaster areas, we introduced the famous Thuraya satellite communications system to Taiwan. Via satellite communication, positioning technologies and internet, we can provide our services to every corner of the island.

I Information Technology
CLOUD COMPUTING

As the leader of the Alliance of Cloud Computing Technologies and Applications (ACCTA), we already launched various innovative services in cloud computing.

SaaS Customer Relationship Management (CRM) Service ◎

Through SaaS Software as a Service , we enable SMEs to perform CRM using cloud computing under a limited budget and help them to enhance their operational value. Besides providing enterprises with a full range of CRM applications, customers can apply for value-adding services such as MMS, eDM or fax application. This way, SMEs can lower their IT cost and elevate their operational efficiency.

hiCloud CaaS Service ◎

hiCloud CaaS (Computing as a Service) is a brand new cloud computing service that we developed. Such service provides customers with a virtual computing environment that can be operated on various operation systems (Windows, Linux, etc). Customers can enjoy the safest, most stable and most reliable internet environment. Apart from that, customers can integrate their customized application settings and programs to perform the services they need.

Environment

We are fully committed to innovative R&D in communication networks. Through outstanding R&D capability and our expertises in communications and network, we have developed many resource-efficient products that reduces burden on the environment.

Industry and Business Certification Smart Cards and Card Issuing System of MOEA

To help promote ICT services, we have developed a new generation of Hi-COS 2048 bits Smart Card system. The system has already passed all inspections by the Ministry of Economic Affairs (MOEA) in December 2009. In January 2010, the Distributed Card Issuing System was brought online and started its operation. In 2009, we held 100% market share in Industry and Business Certificate and expect to issue one million certificates by the end of 2010. Looking forward, we anticipate to see more than 130 million transactions completed through this service with a large saving on paper.

Ministry of Economic Affairs Certification Authority
http://moeaca.nat.gov.tw/news.html

Empowerment

As the citizens in Taiwan, we know it is our responsibility to contribute back to the society. Other than setting up telecommunication and internet infrastructures in remote areas, we will continue to pay attention to the needs of all people in the society, including those at disadvantage, and to help develop more innovative products for the realization of social welfare values.

Smart Mobile National Self Care

With our innovation, we entered the family preventive medical market in which we applied CIT to healthcare and medical treatment services. Users can conduct measurement at specific locations of their limbs (nerves and veins) and transmit the data to the remote database for matching and analysis. From the analyzed data, users will be able to retrieve information regarding his/her personal health for future health management. This is very helpful in saving medical resources and transportation-related resources from hospital visits.

Saving Energy

Continuously utilizing our core expertise in telecommunication technology, we developed various innovative energy-saving and carbon-reducing products. Internally, we can effectively reduce the amount of energy consumed while externally, we can provide customers with a complete range of energy-saving products and services.

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Address ADOC 2.0 Project

> In the 2007 APEC conference in Sydney, Australia, Taiwan's delegate proposed the ADOC 2.0 Project. Private-owned enterprises and NGO from all APEC member states were invited to co-establish a multinational collaboration platform through which private and public institutions can work with each other. Chunghwa Telecom signed the "Letter of Intent for Participation in the ADOC 2.0 Project" on August 1, 2008, and officially became one of the private sector initiators of the ADOC 2.0 Project.

Long Term Relationship with the Visually Impaired

In 1988, we joined the group of "Computer for Blind People" hosted by the Ministry of Education. Alongside Tamkang University Resource Center for the Visually Impaired Students, we developed the "Chinese Information Application System for the Visually Impaired." We committed to provide the visually impaired with a brand new integrated, multifunctional and intelligent telecommunication service that can truly satisfy their needs of a barrier-free communication environment in order to enable them to enjoy the wide range of resources on the internet and thus increase their opportunities in education and employment.

After years of hard-work, our efforts in combining research with practice brought fruitful results. Our self-developed TTS software was applied to the "Chinese/English Information System for the Visually Impaired." Working in combination with the "Barrier-free Mobile Computer Cluster," this system enabled the visually challenged to share the rich results of digital development with the rest of the society.

Our volunteers lead the visually impaired friends to experience the culture and people in northern Taiwan.

Assisting the Visually Impaired to Work Remotely via ICT

Tamkang University's "ADOC 2.0 Digital Opportunity Center for the Visually Impaired" officially started its operation on June 2, 2009. This opened the door of customer satisfaction survey services for the visually impaired while at the same time offered the government and enterprises a new pool of man power. The visually impaired can thus enjoy digital employment opportunities. At the initial stage, 6 visually impaired persons were offered the opportunity to work for Chunghwa Telecom's customer service division. The division will open up more job opportunities in the future.

Through a "fully export operation model," we share our experiences and the successful model with others. In October, 2009, the first overseas "ADOC 2.0 Digital Opportunity Center for the Visually Impaired" was officially launched in Quezon, the Philippines withall the software, hardware, educational training and manpower engagement setup in place at once. It was highly praised by local and foreign media. In addition, the establishment of the "Beijing Digital Opportunity Center for the Visually Impaired" is expected to be completed in September, 2010.

Visually Impaired Information Development Key Index	
Item	2009
Technological Achievement	● Phone CS system by the Visually Impaired ● "Rapid Dictation" System by the Visually Impaired ● Movie Playback System for the Blind ● KTV playback system for the blind, barrier-free reading project and other assisting tools for the visually Impaired.
Computer Educational Training for the Visually Impaired	337 people/year, 454 people in total
Educational Assisting Tools for Visually Impaired Students (people)	407
Barrier-free Internet and Chinese e-Library for the Visually Impaired (viewer)	13,787,249

ADOC 2.0 Project
http://www.apecdoc.org/

Resource Center for the Visually Impaired Students, Tamkang University
http://www.batol.net/

Response 6 Major Emerging Industries

In the Science and Technology Advisory Meeting in November 2009, Premier Wu Den-yih, indicated that the government will actively promote six major emerging industries. After the meeting, the "six major emerging industries" became part of the government's most important industry development strategy. For a very long time, Chunghwa Telecom committed itself in technological innovation. At the same time, we highly value the importance of maintaining a close relationship with Taiwan's industry development. We strive for a healthy relationship with the 6 major emerging industries to bring out our full strength and jointly explore new markets and new business opportunities to create a new phase of collective prosperity.

IPv6 International Standard

Developed by CHTTL, IPv6, an internet management testing tool and standard, has officially become the International IPv6 Ready Logo testing standard.

In 2003, Chunghwa Telecom was commissioned by the government to conduct individual IPv6 standard testing projects and has since devoted itself to promote local relevant technologies. In the past few years, we assisted domestic companies to obtain the International IPv6 Certificate (ranked third in the world in terms of total number of certificates granted) and actively participated in activities regarding International IPv6 Standard Testing. We are one of the founding members of the IPv6Ready Logo Committee and our IPv6 Standard Testing Lab is one of the five IPv6 certified labs recognized internationally. In the future, we will continue to research on and develop relevant standard testing kits to ensure we master the key technology for the next generation internet infrastructure so as to provide assistance for future network technology developments.

GPON Interpolarity Test

We organized "GPON (Gigabit-capable Passive Optical Network)" testing activities for two consecutive years since 2008. This was to speed up the comprehensiveness and maturity of local GPON providers' products and drive the business opportunities of the optical broadband communication industry forward to bring a win-win effect on HiNet 's network infrastructure.

ICT Collaboration

Our full-scale ICT collaboration with the Industrial Technology Research Institute (ITRI) covers 12 areas including cloud computing, e-book, energy-saving applications, remote medical treatment, Triple Play Services/IPTV, Home Messenger system, car-use Telematics system, wireless positioning system, smart monitoring system, HD smart action inspection and service-sharing platform, 3D imaging system technology platform and RFID Reader system.

Trough technological collaboration, we expect to see more inspiration and more telecommunication-related value adding services to perfectly merge our daily needs with ICT. Not only will we reinforce our establishment in the ICT industry but also help carry Taiwan ICT industry forward to complete worldwide.

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Target

Internationalization of R&D Results

Years of hard work in R&D brought us fruitful results and helped us to stay connected with the global community. In 2009, we filed for 26 patents in Taiwan, 1 in UK, 1 in France, 1 in Germany, 1 in Japan, 1 in Korea and 2 in China. We also registered 10 trademarks and 99 copyrights in Taiwan. In addition, we took every opportunity to attend international conferences and intensify the exchange of R&D results internationally.

Taiwan-Nippon IT Commerce Promotion Committee

After 8 years since its establishment, the Taiwan-Nippon IT Commerce Promotion Committee has already made a substantial amount of achievement in the fields of electronic data interchange (EDI), Radio Frequency Identification (RFID), etc. Currently, the position of Taiwanese president is served by our Chairman, Mr. Shuye-Ching Lu. In the "Taiwan-Nippon e-Commerce Collaboration- Six-Party Talk with Officials and Citizens" that took place in June 2009, Chairman Lu and the Japanese president, special advisor Mr. Kawamura Toshiro from NEC, signed a memorandum of cooperation. The memorandum states that besides continuous collaboration on e-commerce, both parties will work together to "create new business opportunities" and conduct more "opinion exchange on IT policies." The part regarding the creating of new business opportunities will focus more on the industries that generate contents while the part regarding the opinion exchange on IT policies will focus more on green IT.

In November 2009, Chairman Lu and Michiyoshi Mazuka, representative of Fujitsu, represented the presidents of the "Taiwan-Japan IT Business Dialogue Promotion Committee" to host the "1st Taiwan-Nippon IT Business Dialogue Conference." The conference confirmed the establishment of working groups for "e-Commerce," "Digital Content" and "Green IT." Experts from the industry were elected as conveners and they are expected to present their results on the "2nd Taiwan-Japan IT Business Dialogue Conference" that will take part in Tokyo in 2010.

Taiwan-Japan IT Business Dialogue
http://www.tjbd.org.tw/tw/

Telecommunication Management Forum

In 2008, we won the "Best Catalyst Project Management-Award of Excellence" with One Stop FMC (Fixed-Mobile Convergence) Service. In 2009, under fierce competition with 20 major international telecommunications operators such as AAPT AT&T COX KT Verizon Telestra Telecom ITALIA Microsoft Online Services, etc, we won the "2009 Best Practices Award-Service Provider" thanks to our remarkable operation structure, standardized interface and striking operational performance.

Telecommunication Management Forum
http://www.tmforum.org