THE PHILIPPINE DIGITAL STRATEGY

TRANFORMATION 2.0: DIGITALLY EMPOWERED NATION

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INDEX OF ACRONYMS AND ABBREVIATIONS

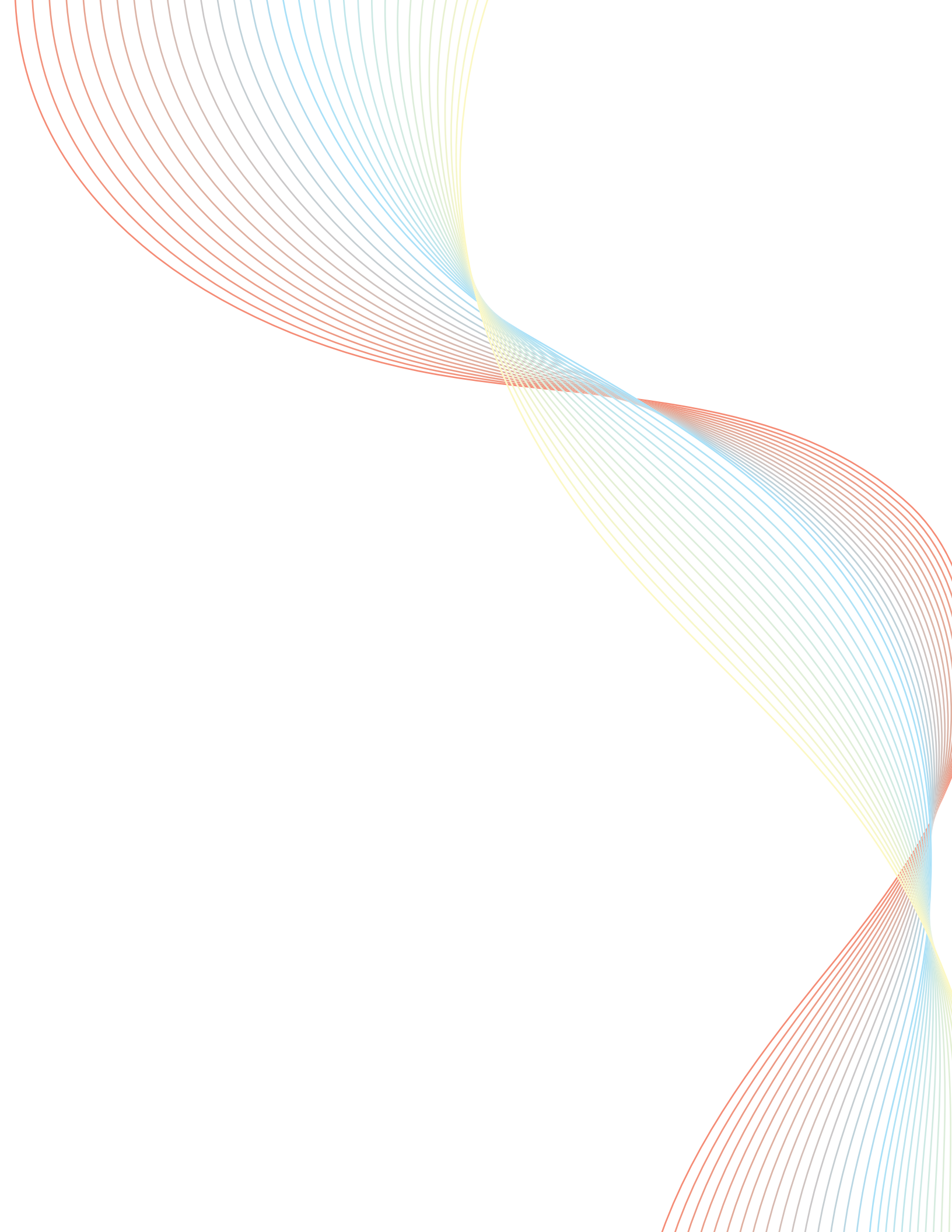
ADB	Asian Development Bank
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
BGN	The Brain-Gain Network
BPAP	Business Processing Association Philippines
BPO	Business Process Outsourcing
CAGR	Compound Annual Growth Rate
CeC	Community e-Center
CEDFIT	Cebu Educational Foundation for IT
CHED	Commission on Higher Education
CICT	Commission on Information and Communications Technology
CICT-HCDG	CICT-Human Capital Development Group
CIDA	Canadian International Development Agency
CIO	Chief Informational Officer
CIOF	The Chief Information Officers Forum, Inc.
COE	Centers of Excellence
COP	Communities of Practice
CPO	Creative Process Outsourcing
CRM	Customer Relations Management
CSC	Civil Service Commission
DBM	Department of Budget and Management
DepED	Department of Education
DICP	Department of Education Internet Connectivity Program
DICT	Department of Communications Technology
DILG	Department of the Interior and Local Government
DoH	Department of Health
DOST	Department of Science and Technology
DOST-ASTI	Department of Science and Technology-Advanced Science and Technology Institute
DSL	Digital Subscriber Line
DTI	Department of Trade and Industry
EGF	e-Government Fund
EIU	Economist Intelligence Unit
ERP	Enterprise Resource Planning
FTEs	Full-Time Employees
G2B	Government to Business
G2C	Government to Citizen
G2G	Government to Government
GDP	Gross Domestic Product
GFI	Government financing institutions
GIFMIS	Government Integrated Financial Management Information System

INDEX OF ACRONYMS AND ABBREVIATIONS

GILAS	Gearing up Internet Literacy and Access for Students
GIA	(Joint) Government-Industry-Academe
GIS	Geographical Information System
GISP	Government Information Systems Plan
HDTV	High Definition Television
HHI	Herfindahl-Hirschman Index
ICT	Information and Communications Technologies
ICT4BE	ICT for Basic Education
ICT4E	ICT for Education
ICT R&D	ICT Research and Development
IPR	Intellectual Property Rights
IPV6	Internet Protocol version 6
ISSP	Information Systems Strategic Plan
ISTE-NETS	International Society for Technology in Education-National Educational Technology Standards
IT/BPO	Information Technology/Business Process Outsourcing
ITES	ICT-enabled services
ITFP	Information Technology Foundation of the Philippines
JICA	Japan International Cooperation Agency
KPO	Knowledge Process Outsourcing
LCD	Liquid Crystal Display
LGUs	Local Government Units
MOOE	Maintenance and other operating expenses
mSMEs	Micro, small and medium enterprises
mSMITE	Micro, small, medium IT entrepreneurs
NCR	National Capital Region
NGAs	National Government Agencies
NGOs	Non-Government Organizations
NICP	National ICT Confederation of the Philippines
NICs	Network Interface Cards
NLP	National Library of the Philippines
NTC	National Telecommunications Commission
ODA	Official Development Assistance
PAQTVET II	Philippine-Australia Quality Technical Vocational Education and Training Project
PC	Personal Computer
PDP	Philippines Development Plan 2011-2016
PDS	Philippine Digital Strategy
PhilGEPS	Philippine Government Electronic Procurement System
PHILPOST	Philippine Postal Corporation
PhilNITS	Philippine National IT Standards

INDEX OF ACRONYMS AND ABBREVIATIONS

PII	Philippine Information Infrastructure
PPPs	Public-Private Partnerships
PSUCCESS	Philippine State Universities and Colleges Computer Education Society
PWAG	The Philippine Web Accessibility Group
RFP	Request For Proposal
RSS feeds	Really Simple Syndication feeds
SBI	Smart Broadband Inc.
SEC	Securities and Exchange Commission
SMEs	Small and Medium Enterprises
SMS	Short Message Service
SULONG	SME Unified Lending Opportunities for National Growth
SWOT	Strengths, Weaknesses, Opportunities, and Threats
TESDA	Technical Education and Skills Development Authority
TWG	Technical Working Group
UASF	Universal Access and Service Fund
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNPAN	United Nations Public Administration Network
US-AID	United States Agency for International Development
VoIP	Voice over Internet Protocol
VPN	Virtual Private Network
WB	World Bank
WMP	Workforce Mobilization Program



FOREWORD

The world is experiencing a digital revolution and the Philippines has the opportunity to play an enormous role in it. Information and Communications Technology (ICT) is an important part in the country's development. Opportunities abound with the help of ICT.

Concepts that were previously not even a glimmer of thought are now commonplace, thanks to the technology and convenience that ICT has brought. Ideas and thoughts are now easily exchanged, developed, and implemented with less cost and less time, allowing for innovations and new ways of thinking.

The previous ICT road map laid the foundation for the development of ICT in the country; now, we build it up even further with the Philippine Digital Strategy (PDS).

The PDS lays out what needs to be done in order for the country to progress. It allows Filipinos to be more than just informed and updated on the latest trends in technology; it helps create citizens who are proactive and innovative – blazing trails instead of just following what has been done before.

With the PDS, we build a citizenry not just knowledgeable on ICT, but also adept in it. We envision a new generation of Filipinos becoming more than consumers of technology and its products. We want them to become creators – building on and improving existing technology and producing digital content that improves personal productivity and contributes to the national economy.

The Philippines positions itself at the forefront of the digital revolution – dynamic and in command of the future. The PDS allows us to achieve this and to reap the benefits of what ICT brings: better education, a better and stronger economy and industries; and overall, a better quality of life for Filipinos.

It is my hope that the different stakeholders in our society – from the private sector, the academe, civil society, and the government – take an active role in implementing the plans outlined in this strategy, just as they have been as active in giving their thoughts and opinions on the content of the PDS. Together, we can achieve the objectives that have been set forth, and help make this country stronger and even better. Together, we create a digitally empowered Philippines!

Secretary Ivan John E. Uy
Chairman
Commission on Information and Communications Technology

PREFACE

The Philippine Digital Strategy (PDS) for 2011 to 2016 builds on its predecessor, the Philippine Strategic Roadmap for the Information and Communication Technology (ICT) Sector 2006-2010. The previous ICT Road Map covered four major areas, namely: ICT Infrastructure, cyber services, human capital development and e-Governance. It identified the desired targets, strategies and actions to achieve an information society; one that promotes sustainable development and improved quality of life for all.

The Philippine Digital Strategy 2011-2016 is national in scope. It recognizes that ICT increasingly permeates all parts of the economy and society, both globally as well as in our country. There is hardly a part of society and the economy that is not touched by ICT, either directly or indirectly. ICT is cross-cutting. ICT is an enabling tool, a critical infrastructure like transportation, water and electricity. The PDS looks at how ICT can make a difference in key areas such as government and governance, in education, our economy, in employment and our industries and small businesses; and how it can be used for national development, empowering citizens, fighting corruption and poverty, and transforming government. This strategy aims to show how ICT can help fulfill the priorities of the Aquino Administration.

This Strategy presents a renewed vision for ICT and its use in transforming Philippine Society into a competitive force in the digital economy by the year 2016. Development of the strategy was an inclusive process involving a broad spectrum of stakeholders including government at all levels, private industry, and civil society, and incorporating best practices in the use of ICT by other countries.

The Strategy, as developed and presented here, covers thrusts, objectives, targets, and key actions for using ICT for socio-economic development at a broad, national level. It is strategic in orientation, indicating the desired direction for the role and use of ICT in uplifting Philippine society. There are, however, sufficient details that point to specific types of policies, initiatives, measures, programs or actions that need to be undertaken to achieve the stated objectives and targets. This balance between high-level strategic direction and specificity allows for action to be taken soon, as it contains important options and input, but allows the various implementing agencies some flexibility in how they should go about it in detail. Also, more detailed programs and projects can be fleshed out during the implementation of the PDS. It should also be noted that in some cases there was insufficient data available, and thus a key initial recommendation of the PDS is to initiate research, surveys and data collection in order to base its implementation, and desired targets, on solid ground. The PDS is sufficiently flexible for making refinements in objectives once more data is available.

We start with an introduction, outlining purposes, principles and roles of the various stakeholders; this is followed by a brief summary of the Philippine digital scenario and an assessment of the challenges and opportunities, setting the context for the main sections of the strategy. We follow this with an introduction of the four strategic thrusts, highlighting their respective interrelationships. Each strategic thrust is then presented in their own distinct sections of the strategy. In each section, summary tables are provided on the key actions and implementation arrangements (suggested leadership and funding approaches for each action) necessary to attain the intended results of the strategic thrusts. This is followed by a chart, graphically summarizing the required milestones for each action and the time it is expected to take to reach these milestones.

There are also several cross-cutting themes in the PDS such as gender, green ICT, and how to effectively communicate ICT-related issues and raise overall ICT awareness, and these are incorporated in the discussion of each of the strategic thrusts. The last section of the PDS covers activities and topics to consider as we move forward with its implementation. Annexes are provided at the end of this strategy to present details and additional information.

EXECUTIVE SUMMARY

Information and Communication Technology (ICT) has become and will continue to be an integral part of the day-to-day life of every Filipino across all levels of our society. The pervasiveness of communication technology around the world necessitates that government embark on a cohesive and coordinated strategy on how to prepare its citizens to survive, live and thrive in a digital world.

The current ICT master plan for the Philippines dates back to 2006. With all of the new developments in this highly dynamic field, there is clearly a need to develop a new blueprint on how the country and its people can benefit from the use of ICT in governance, our economy and improving one's way of life – one that is aligned to the Philippine Development Plan (PDP) 2011-2016 now being rolled out by the current administration. With various private sector groups providing the motivation, the Commission on Information and Communication Technology (CICT) has taken on the task of developing a new road map entitled the Philippine Digital Strategy (PDS).

The PDS has a vision of

"A digitally empowered, innovative, globally competitive and prosperous society where everyone has reliable, affordable and secure information access in the Philippines.A government that practices accountability and excellence to provide responsive online citizen-centered services. A thriving knowledge economy through public-private partnership."

The strategies presented here and developed in consultation with various key stakeholders will steer our country closer to this vision.

Firstly, the PDS sets the development of e-Government as a priority, facilitating greater efficiencies and effectiveness in the delivery of basic social services and minimizing opportunities for corruption. The PDS calls for implementation of systems which will support the government's fight against poverty and ensure integration and interoperability of ICT infrastructure and programs across government agencies. Emphasis is placed on enhancing the capability of government structures and institutions as well as upgrading the ICT skills of the entire bureaucracy. The goal is also to enable citizens and businesses to transact with government electronically; the e-Government Fund will be made accessible to encourage the development of citizen-centric applications. Another key element of this thrust is to make government more transparent, interactive and sharing more government data online. This is geared towards facilitating greater citizen engagement in the governance equation (e-Governance) and a two-way dialogue between government and citizens.

Secondly, the PDS identifies all people having access to the Internet and its opportunities as one of its major thrusts. Learning from the past, where either the government simply obligated private sector operators to serve unviable areas; or government deployed hundreds of Internet facilities around the country just to find them often challenged by sustainability issues and underutilization, this strategy has a new approach. It will focus on creating an enabling environment: with incentives and a broadband policy that will accelerate the expansion and service provision of broadband by the private sector, reaching previously unserved areas and customers. Furthermore, it will create public-private partnerships that leverage government and private sector funding to serve areas and people that are truly beyond commercial viability. But Internet is seen here also as more than just infrastructure and service provision. The PDS also takes care of digital inclusion, capacity building – especially in schools, and content and applications development by a variety of local players and stakeholders. Last but not least, protecting customers online is critical, as well as data security and privacy, and the protection of children.

EXECUTIVE SUMMARY

A third element of the PDS is the focus on supporting continued growth of the IT/BPO industry and extending the benefits outside Metro Manila and Metro Cebu, so as to fast-track national development and provide opportunities for investment and jobs to other regions in the country. It also provides a mechanism to enable micro, small and medium size enterprises (mSMEs) by developing their capacity to use the Internet as a market expansion tool. Through Public-Private Partnerships, investments in Research and Development and business incubation facilities will be encouraged. Lastly, this element will focus on enabling other industry sectors in the effective use of ICT for efficiency, innovation and competitiveness.

Fourth, the strategic thrust on "Investing in People" addresses not only the needs of our formal sectors, but also of our marginalized communities. Innovative approaches must be taken to ensure the digital inclusion of all sectors of the population. To this end, programs will be put in place to support the unique requirements of differently-abled people, indigenous peoples and island communities in the development of content and the method of delivering ICT training. Broadband Internet access and integration of ICT in curriculum across all levels of our education system will be a priority to ensure that the shortfall of a skilled workforce will be addressed, thereby ensuring that our global leadership, particularly in the Business Process Outsourcing (BPO)/Knowledge Process Outsourcing (KPO)/ Creative Process Outsourcing (CPO) sectors, will be sustained.

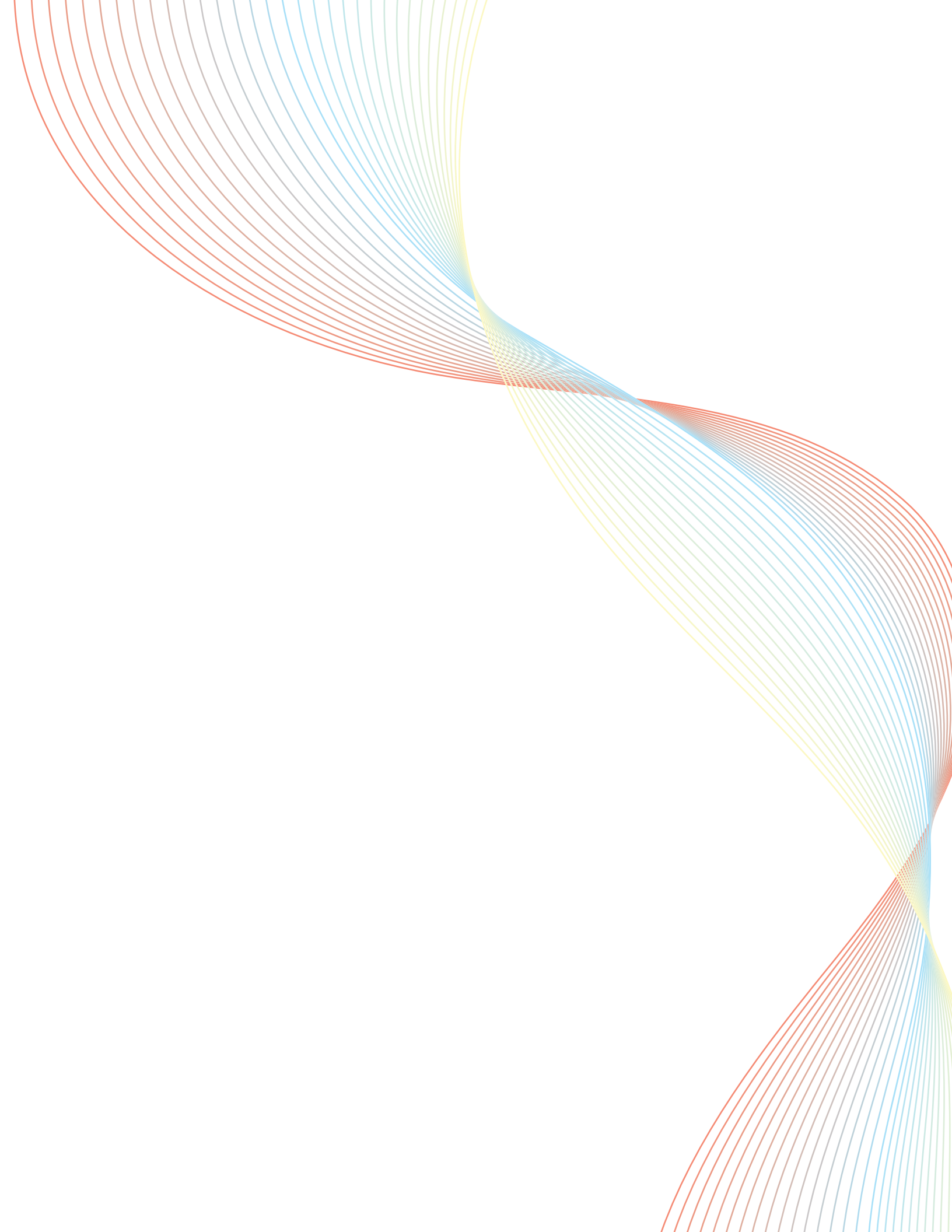
The PDS highlights the need for policy and regulatory reforms and identifies new as well as amendments to existing legislation to spur the growth of the industry. New legislation involves the reorganization of the executive branch by elevating the role of ICT development to a Department and accelerating passage of several pending bills addressing computer privacy and security. Outdated by new developments in technology, the Telecommunications Act and the Procurement Law need to be revisited to ensure a more competitive and transparent environment, as well as increase consumer protection. Cross-cutting issues such as gender and protection of the environment are addressed by specific measures in each of the four strategic thrusts.

Lastly, the PDS broadens our horizon to support progress and innovation, paving the way for the introduction of new concepts such as cloud computing, which will allow more effective and affordable development and deployment of ICT not only in micro, small and medium enterprises but also in local governments. The PDS will also encourage the use of more modern alternative media such as social networks in the distribution of information and the empowerment of citizens.

All the above strategies revolve around the role of the private sector, be it business, academe or civil society, as partners with government in developing the country in all the elements of ICT. Consistent with this government's thrust, Public-Private Partnerships (PPPs) are an essential ingredient in the PDS to implement programs in e-Governance, broadband deployment, and ICT training.

It is important for both government officials and the public to recognize that this is a national strategy which impacts the overall development of the country and as such will be adopted as part of this administration's agenda. This involves the personal leadership of the President to ensure that all departments of government play their role in implementing programs affecting their respective constituents which will support the strategies identified by the PDS. Only then can we ensure that we keep up with the pace which many other countries around us have set in their national development.

1. THE PHILIPPINE'S DIGITAL FUTURE



THE PHILIPPINES' DIGITAL FUTURE

The purpose of this Philippines Digital Strategy is to

> Harness the potential and power of Information and Communications Technologies (ICT) to support the attainment of the Government's agenda and objectives contained in the Social Contract with the Filipino People and the Philippines Development Plan (PDP) 2011-2016; and

> Respond to the global trend towards a digital economy and knowledge societies and ensure that the country's economy and society is prepared to compete in this digital economy and take advantage of its opportunities.

The vision for the Philippines, as defined under the PDS, is:

"A digitally empowered, innovative, globally competitive and prosperous society where everyone has reliable, affordable and secure information access in the Philippines.A government that practices accountability and excellence to provide responsive online citizen-centered services. A thriving knowledge economy through public-private partnership."

The following sections address these objectives in more detail.

1.1 HOW ICT AND THE PDS CAN HELP TO ACHIEVE THE GOALS OF THE AQUINO ADMINISTRATION

The Aquino administration has identified and committed to 16 key areas or activities for the country. ICT can be a critical enabler for this. The following objectives and activities in particular can benefit from ICT development:

Transformational Leadership

ICT is the tool which can become a key element of transformational change, creating:

> More transparency in government operations and reducing corruption by placing more government data in the public domain using the Internet, thus increasing opportunities for public scrutiny;

> More direct e-Government services, which provide fewer opportunities for corruption;

> A better delivery of public services; examples are health services through better data collection and data sharing, e-health services, receiving health tips or paying micro health insurance via mobile phones; and more tele-health serving rural and remote locations; and

> Access to ICT allows citizens to access relevant information and provide feedback on governance and thus facilitates more consultative policy-making.

THE PHILIPPINES' DIGITAL FUTURE

Investing in people - Education for a digital economy

While integrating ICT into the educational sector requires considerable investment, an ICT-literate nation will boost the Philippines' competitiveness and create new employment opportunities.

ICT also greatly facilitates access to educational material, as well as encourages new forms of learning via the Internet. ICT skills in themselves are a critical part of education in today's globalized world.

Investing in people creates a digitally inclusive society. ICT literacy can also build capacity and create opportunity among the poor and the marginalized in the country.

Creating jobs and real economic growth

The country's IT/BPO industry has created considerable direct and indirect employment and is poised to grow further, especially in regional cities. Its capabilities can also be used for local applications, like developing national electronic medical records or using animation talent for local e-learning applications. Small and medium-sized companies can integrate ICT into their production value chains, becoming more efficient, allowing for innovation and faster growth. Various key industry sectors can benefit from it, including tourism, agribusiness, manufacturing, retailing and health care.

According to well-documented World Bank and academic studies, every 10% increase in broadband penetration boosts Gross Domestic Product (GDP) by an average of 1.3%, and every 10% increase in mobile density correlates with a 0.7% increase in GDP. Similarly, online one-stop shops or similar e-Government services can streamline bureaucratic procedures for faster business registration and investments. ICT-related strategies can create conditions conducive for investments.

Innovative mobile applications – such as market price and transaction platforms, agriculture value chain automation, micro-insurance for crops and other examples – have been shown to increase the productivity and income of rural farmers, fisheries and other agricultural activities.

Protecting the environment

Good broadband connections enable face-to-face meetings through video-telecons, reducing the need to travel and use cars, thus decreasing energy usage and the attendant pollution from vehicle use. This situation also helps decongest cities, as well as provide opportunities for teleworkers. Many Geographic Information System (GIS)-based ICT tools can help monitor the environment and natural resources more efficiently, allowing faster information updates and dissemination on environmental conditions. However, the government and the ICT industry need to ensure that the concept of "green ICT" is widely recognized and properly practiced. Green ICT covers practices in the design, use and disposal of ICT systems, products or services that are environmentally friendly thereby minimizing energy consumption and carbon emissions.

1.2 INTERNATIONAL TRENDS

Whereas the terms information society and knowledge economy have been known and understood for several years, economies around the world are increasingly becoming classed as digital, to reflect a new style of dynamism.

Observers suggest that there are various interlocking driving forces, which are changing the rules of business and national competitiveness:

- Globalization — markets and products are more global in reach.
- Information technology is manifesting itself as a key driver in the following ways:
  - Efficient production relies on information and know-how. Over 70 per cent of workers in developed economies are information workers; many factory workers use their heads more than their hands.
  - New media increases the production and distribution of knowledge, which in turn results in collective intelligence. Existing knowledge becomes much easier to access as a result of networked databases which promote online interaction between users and producers.
  - Computer networking and connectivity – developments such as the Internet bring the "global village" even nearer.

As a result, goods and services can be developed, bought, sold, and in many cases, even delivered over electronic networks.

Therefore increasingly, more and more countries are developing comprehensive strategies that address how ICT transform our lives. While some are called national ICT plans or policies, more and more are called Digital Strategies or similar, acknowledging the fact that it is not only ICTs, but an integrated digital world.[i]

Furthermore, the Association of Southeast Asian Nations (ASEAN) has developed their ASEAN ICT Master Plan 2015, with strategies towards an empowering and transformational ICT for the region.

The Philippine Strategic Roadmap for the ICT Sector 2006-2010 set the direction and priorities for ICT development in the country, and provided a strategy for how the ICT sector would support the socio-economic development goals of the country, as embodied in the Philippine Development Plan (2006-2010). The Commission on Information and Communications Technology (CICT) was designated to take the lead in the implementation of the Roadmap.

The year 2010 marks the end of the five-year period of the Roadmap, and this Philippine Digital Strategy is to be its successor Roadmap, covering the period 2010-2016. The new strategy is imperative as we seek to preserve the gains we have achieved and maintain our global competitiveness in this critical sector, a sector that is widely recognized as a key driver of economic growth and an enabling tool for social development and poverty reduction.

1.3 IMPORTANT CONSIDERATIONS

Any digital strategy has to be national in scope. ICT developments affect many players and all sectors of the economy and society. Its development and implementation require leadership at the highest level as well as coordination among all government departments and agencies and various levels of government (national, provincial and local). This is why the CICT sees itself as the facilitator for the development of the Philippines Digital Strategy, not the creator, as this strategy is co-created with all key stakeholders and the wider public.

The active participation of industry and the public – in participating in strategy development and playing their role in its implementation, is required. All three main stakeholders – government, industry and the public – need to play their role for achieving maximum benefits from ICT.

Role of Government

- Create conducive regulatory frameworks
- Be a model user of ICT
- Build ICT competency
- Collaborate across department boundaries and across various levels of government
- Leverage expertise of private sector

Role for industry

- Participate in public-private partnerships
- Adopt ICT and smart technology
- Invest in digital infrastructure
- Build digital skills
- Develop viable, visionary and useful ICT platforms and services, including mobile applications, digital content and other e-commerce businesses

Role of the public

- Engage and participate online
- Provide feedback regarding online services so these can be improved
- Practice secure online activitiesy
- Experience and assimilate inclusive digital participation

Principles of implementation

The following principles will be employed and will guide the implementation of the Philippines Digital Strategy:

- Consultative – Consulting relevant stakeholders, including users of planned services, will be an important element when developing detailed implementation plans and during implementation of strategies;
- Transparent – Information about the implementation of the PDS and various parts of its strategy, its financing and costs, will be open to the public through a variety of means, including annual progress reports made available online;
- Cost-efficient – Without sacrificing required quality standards, strategies will be implemented with cost efficiency in mind: realizing maximum value with limited resources, and using competitive mechanism where feasible and appropriate;
- Public - Private-Partnership – Public-Private Partnerships (PPPs) in ICT involve the cooperation of the public sector and the private sector, and refer to either of the following: a) Private sector entities carrying out assignments on behalf of public sector entities or to fulfill public policy goals; or b) Public sector activities meant to aid private sector entities; and
- Adaptive – Recognizing the fast-paced development in the ICT sector and the global marketplace, the Philippines Digital Strategy will be open for changes and adaptations if required, without relinquishing the overall purpose and key visions.
- People-empowering – Keeping in mind that all the technology and efforts are intended to benefit the empowerment of Filipino men and women.

1.4 HOW THIS STRATEGY WAS DEVELOPED

The development of this strategy was a highly collaborative and consultative process, led by the CICT. This approach engaged the following stakeholders through meetings, consultations and briefings (refer to Annex 1 for a complete list of participants):

- Technical Working Groups comprised of government officials, industry representatives and civil society to provide expert and stakeholder input and vision on the key strategic thrusts;
- Partnership approach with other key government departments; and
- A series of Focus Group Discussions and workshops with various key stakeholders including regional consultation.

This document was subjected to a process which is aimed at securing the participation and support of the key sector interests and the wider public, to enable and energize the Philippines to take its place as a fully competitive digital economy, which meets or outperforms the growth expectations of the ASEAN region.

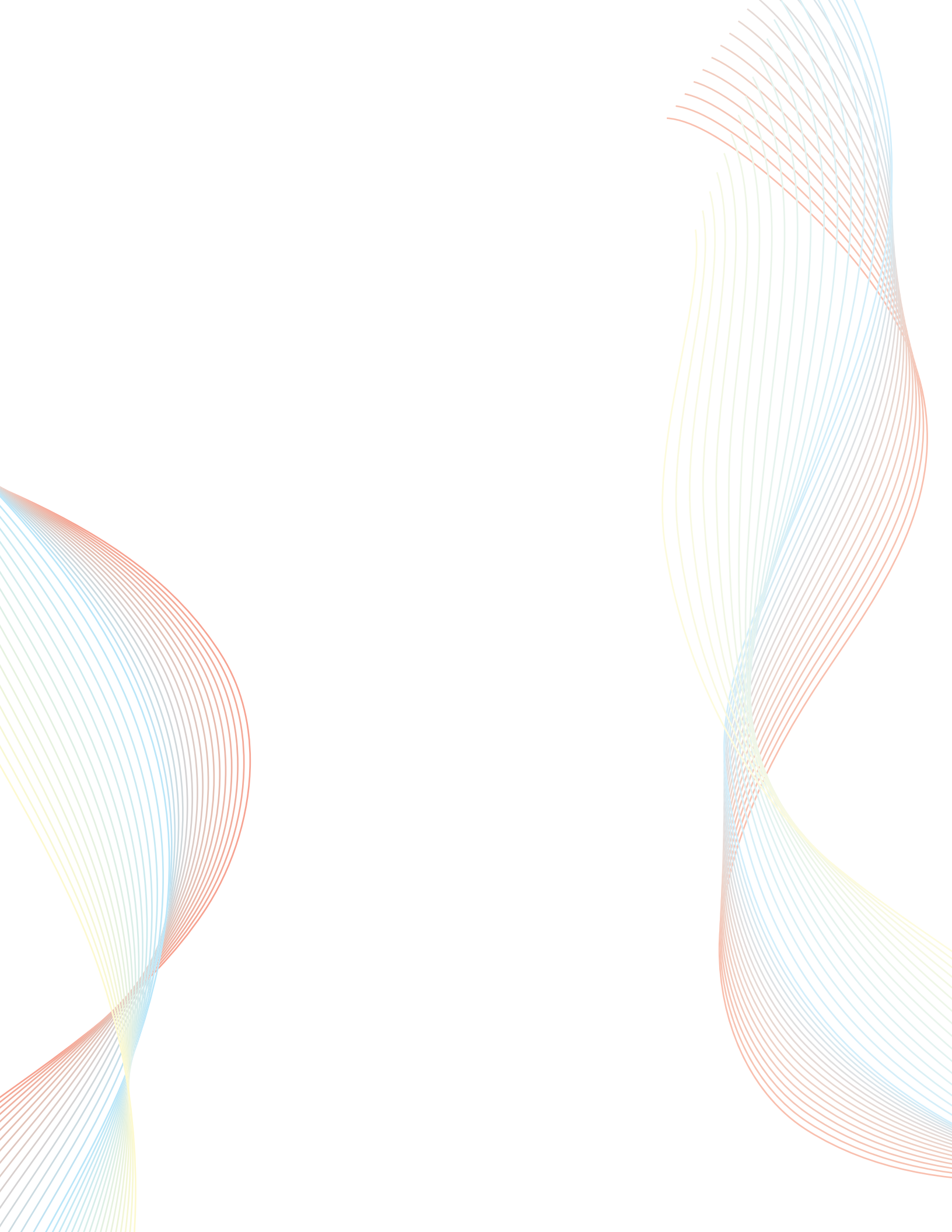
1.5 MEASURING PROGRESS

Stakeholders involved in creating this digital strategy all agreed how important it is to include specific targets so that progress can be measured as the PDS is implemented. This is important to ensure that government intervention and other key actions have their intended outcomes and benefits. It also helps to fine-tune actions, programs and measures, or take corrective action if certain measures do not produce the intended results. It also helps to create clarity in what we are trying to accomplish.

In some areas we had sufficient and up-to-date baseline data, forecasts or international benchmarks to develop appropriately supported targets. In other areas, there is a lack of reliable baseline data, which does not allow the development of proper targets. As such, many strategies include the collection of baseline data in the first year to improve the data situation and allow better target development for the remaining years of this strategy. We also included in those cases without sufficient data proxy targets or "best effort" targets to keep the strategy specific. We also endeavoured to keep targets realistic and at the same time forward looking, i.e., not necessarily based on past performance but assuming new approaches, new partnerships and new technology that allows for more aggressive progress.

Data and targets of all strategic thrusts shall be reviewed and targets refined annually, in light of new data or new developments.

2. PHILIPPINE ICT SITUATION AND STRATEGIC DIRECTION



2.1 ICT SITUATION

This section provides a brief summary of the ICT situation in the country, highlighting strengths and weaknesses, opportunities and threats. Based on these, we introduce the four strategic thrusts which have been developed as a response to the analysis of challenges and opportunities. We show how these thrusts are linked to each other. People are central in this digital strategy, not only as the ones that collaborate to implement it, but also as the beneficiaries.

We have achieved a high level of ICT development in several areas and ICT continues to grow and evolve. Specific areas of significant growth include mobile phone penetration and the local IT and BPO sector. Ownership and usage of mobile phones is high at over 100% penetration rate, almost at par with Malaysia, a country with a higher per capita GDP. Cell phones are used across all socio-economic classes and over a wide geographic area.

Based on the latest Business Processing Association of the Philippines (BPAP) data, the country's IT/BPO industry has grown by around 25% yearly from 2006 to 2010 and revenues generated by the sector reached US$ 8.91 billion in 2010. We have also reportedly surpassed India in terms of voice related outsourced work to become the global leader in this area. Forecasts made by the BPAP indicate growth in the range of 9% to 20% yearly from 2011 up to 2016 for IT/BPO services.

We benefit from the presence of two fibre-optic backbone networks linking most parts of the country. In addition, a good English speaking population has helped the BPO companies recruit the needed personnel for their operations. These factors, among others, have allowed us to maintain our digital economy ranking. In the 2010 Digital Economy report from the Economist Intelligence Unit (EIU), the Philippines maintained its ranking of 54 out of 70 countries. We continue to compare well against countries such as Thailand, India and Jordan as shown in Table 2.1. Interestingly, we ranked four places ahead of India's 58th place – our direct competitor for the worldwide BPO/KPO market.

Of the component scores that make up the Digital Economy Ranking, we scored well in its Business Environment and Government Policy and Vision. The role of ICTs is recognised by government and this has some impact on the attractiveness of the business environment for new businesses.

Nevertheless, there are also various areas of weakness, where renewed investments and joint efforts by all players are necessary to improve the

Table 2.1 – EIU Digital Economy Rankings (select countries)

Country	Digital Economy Ranking	Digital Economy Score
Hong Kong	7	8.22
Singapore	8	8.22
Taiwan	12	7.99
South Korea	13	7.94
Japan	16	7.85
Israel	26	6.96
United Arab Emirates	32	6.25
Malaysia	36	5.93
Turkey	43	5.24
Thailand	49	4.86
Jordan	51	4.76
Saudi Arabia	52	4.75
Philippines	54	4.47
China	56	4.28
India	58	4.11
Vietnam	62	3.87
Sri Lanka	63	3.81
Indonesia	65	3.60
Pakistan	66	3.55
Kazakhstan	67	3.44
Iran	69	3.24

Source: Economist Intelligence Unit, 2010

country's standing and benefit our people and businesses. One weakness is the country's connectivity ranking, where it scored 2.6 out of a possible 10. This is due to the low broadband penetration and usage among the population, partially caused by limited competition in this sector. The limited competitive pressure means that price reductions and broader service roll-out are not developing fast enough, limiting broadband uptake. However, broadband is gaining particular importance for economic growth and this remains one of the key challenges we face.

Overall, our e-Government ranking dropped compared with other countries, and a lack of strong e-Government leadership and coordinated efforts among departments and the various levels of government have been identified as areas for concern. The government is also hindered from making progress in improved e-Government services and increased engagement with its citizens due to a lack of shared infrastructure, proper ICT tools and sufficient capacity and training. It is important to note though that most countries have found that the biggest challenge with regards to improving e-Government is the change in culture, organization and re-designing of work processes and relations that e-Government requires.

Digital literacy is increasingly crucial for people to participate in society, to take advantage of the opportunities of the Internet, to find employment and to be able to keep learning throughout their life. However, many schools are not yet fully equipped with Internet access and computing devices to help children become digitally literate. Many teachers are insufficiently trained to teach ICT literacy. Furthermore, people outside the school system and many marginalized groups can benefit from digital literacy and thus it is important that measures reach out to those as well. These ICT skills are important for the IT/BPO industry to continue to grow and also to use ICT in many other industry sectors such as agriculture, tourism, fisheries and small-scale manufacturing. However, compared to other countries in our region, we have not spent as much on education as a percentage of GDP, and in particular, under-spent on equipping our children with 21st century ICT tools and skills. Greater effort and collaboration is required to catch up with the world and ensure our economy remains competitive and that citizens are equipped with the skills for the information and knowledge society.

While there is strong global competition and rapid technological change and no country can stand still, these threats can be at the same time our opportunities. Technological change continues to bring costs for ICT down and thus within reach for more people. An example is cloud computing, which will now allow more small and medium companies to have access to wider arrays of software, applications and data. The same applies for government. The global ICT and BPO sector is growing exponentially, and we are well positioned to take advantage of that. ICT is an enabling tool and can also help to develop the country further, empower and engage citizens, provide access to information and share knowledge.

In summary, our country has to resolve a number of weak spots to make full use of its strengths in exploiting opportunities that are arising on the horizon. It requires a determined leadership, coordinated effort and work across government departments, industry, academe, civil society and the people.

Specific data and qualitative analysis can be found throughout the strategic thrusts, but also in Annexes 2 and 3. Table 2.2 below briefly summarizes the current scenario of ICT in the country based on a Strength, Weakness, Opportunity, Threat (SWOT) format.

Table 2.2 The Philippines ICT Scenario (2011) – SWOT Summary

	STRENGTH	WEAKNESS
INTERNAL	New government poised for change Maintained digital economy ranking Very high mobile phone penetration Good fibre-optic backbone infrastructure Large English-speaking & tech-savvy population Strong competitive IT/BPO sector e-Government Fund to fund inter-agency ICT projects Gender Advocacy and Development Fund – for use by NGAs and LGUs for ICT and gender development projects	Concentrated telecom market, limited competition Low broadband penetration & limited service provision throughout country Low government spending on Education in the past Insufficient ICT training and skills Drop in e-Government ranking & lack of coordinated, cross-department e-Government services Low ranking in ease of doing business Limited local content available Lack of high-level ICT leaders in government Lack of standards on interoperability and ICT resource sharing Lack of transparency in government
	OPPORTUNITIES	**THREATS**
EXTERNAL	Technology advances that support cost-effective broadband coverage Web 2.0 and cloud computing Strong global growth of BPO/ICT sector Greater access to information, knowledge, services and applications through Internet access Strong support from private sector, civil society and government at the local level Support from international and global partnerships	Strong global competition Rapidly changing technology – risk to procure "wrong" technology, quickly outdated, cost implications Slow economic development

2.2 STRATEGIC THRUSTS

Given the above scenario, the PDS seeks to address the various issues and move the country forward through four strategic thrusts. These strategy areas seek to build on our country's many strengths and opportunities using ICT as a tool, while tackling some of its most pressing weakness and threats. The strategic thrusts are as follows:

Transparent Government and Efficient Services recognises how ICT can help transform the delivery of government services to its citizens and businesses to make these more responsive, available, accessible and efficient. ICT is recognized as an enabling tool and needs to be paired with capacity building and training, work process and organizational redesign, as well as a new culture and leadership, emphasizing citizen-centric services and excellence in service provision.

Internet Opportunities for All People incorporates the development of the needed infrastructure to overcome the connectivity deficit in the Philippines and increase broadband coverage and penetration. But it also goes beyond infrastructure and emphasizes that the purpose is digital inclusion and opportunities for all, thus looking at the demand side of broadband, affordability issues and services, content and applications available through this infrastructure.

Investing in People: Digital Literacy for All highlights the fact that in order for our country to reap the many rewards that go along with a full-fledged digital economy, human capital development must keep pace with advances in technology, innovation and new ways of doing things. Investing in people benefits the economy, by being more competitive, creating more jobs and encouraging economic growth. It benefits the government through increasingly skilled human resources and engaged citizens that can communicate and collaborate through ICT; and it benefits the society and people, as they have skills to improve their lives.

ICT Industry and Business Innovation for National Development addresses the needs of the private sector, such as an enabling environment, skilled workforce and coherent national brand and positioning of the country as a leading ICT and BPO destination. It also focuses on improving the environment for innovation and investment in ICT-related research and development. This strategic thrust includes those directly involved in ICT, but also industries and especially micro, small and medium-sized businesses that can benefit from using ICT in their value chains. The effort will benefit the entire country through economic growth and job creation.

All four strategic thrusts are linked and work together to achieve the vision of this PDS. Improved broadband infrastructure and availability supports and facilitates ICT education by making available educational content to a broader number of individuals. It also helps more businesses use online transactions and for government to deliver more efficient and accessible services to citizens. Increasing digital literacy and ICT skills provide more qualified workers for the ICT industry (especially the BPO sector) and provide government agencies with the personnel to handle increasing demand for e-Government services from the public. Transparent and improved public services through ICT benefit local businesses, allowing more private sector transactions with government and other Public-Private Partnership opportunities.

In each of the strategic thrusts, actions are embedded to address cross-cutting themes on gender, green ICT and general ICT awareness. ICT can be a powerful tool for promoting gender equality since access to ICT can enable individuals and communities to interact and share information on a global scale in a faster and potentially cheaper manner. ICT creates new avenues for women's empowerment. Studies however showed that ICT policies in our country are basically gender-blind. This strategy, therefore, includes actions that are aimed at narrowing the gender digital divide, building capacity amongst women, and enhancing the role and participation of women in e-Governance.

As the pace of technology adoption increases and use of ICT accelerates, it is important for organizations to consider how it can help manage the effects of ICT on the environment and on climate change. This Strategy aims to ensure that joint efforts of government and private sector are geared towards implementing what is called "Green ICT."

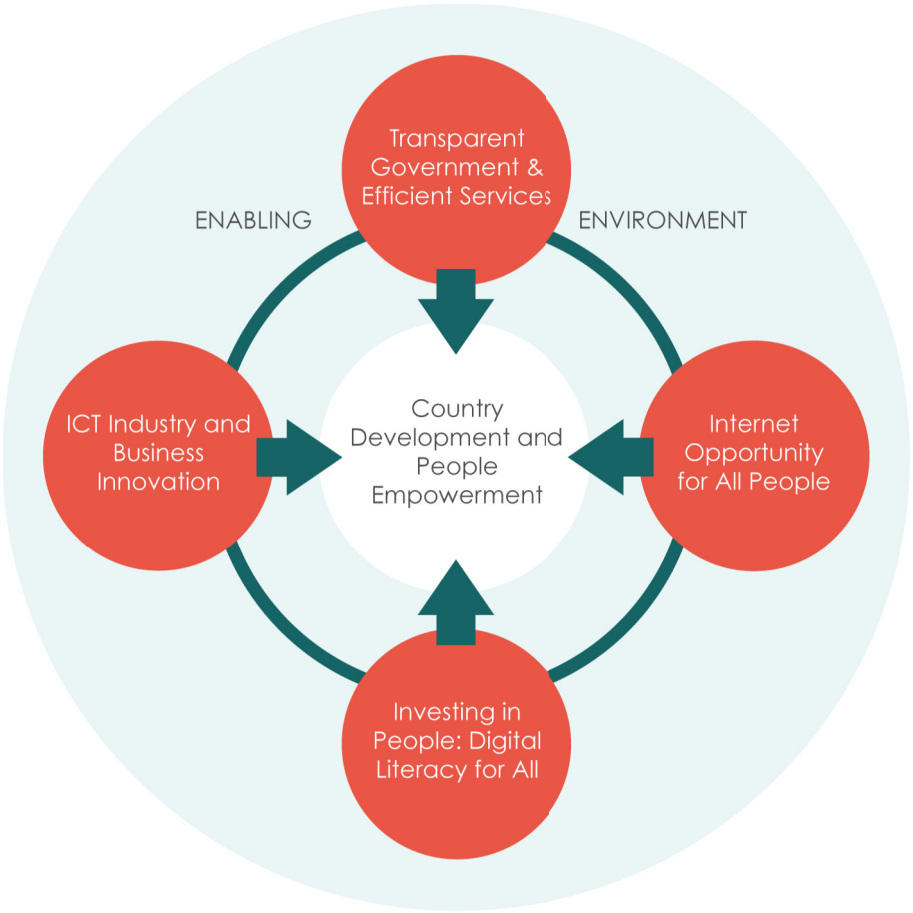
An overriding consideration on the development of an ICT strategy is the level of awareness of many sectors of our society on the role that it plays. A major communications strategy has to be embarked on to support any long

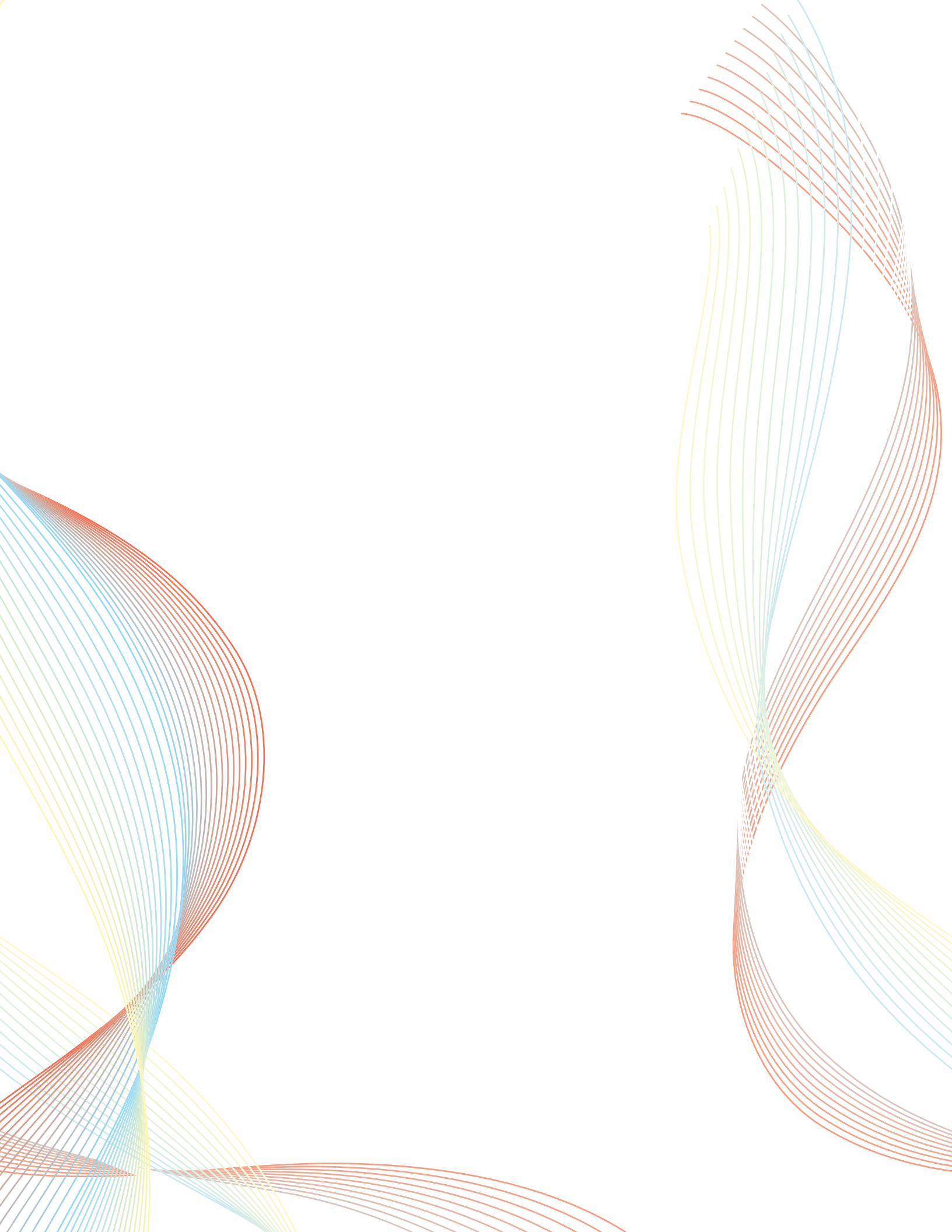
term strategy on ICT development. This cuts across all the four strategic thrusts of this PDS. This includes educating our senior government officials on how ICT can help them more effectively perform the functions of their agencies, to raising the awareness of rural communities that access to ICT can help improve their livelihoods, to providing all levels of our educational systems the ability to enhance their learning with access to knowledge available through e-learning.

In the following four sections we present each of the developed strategic thrusts.

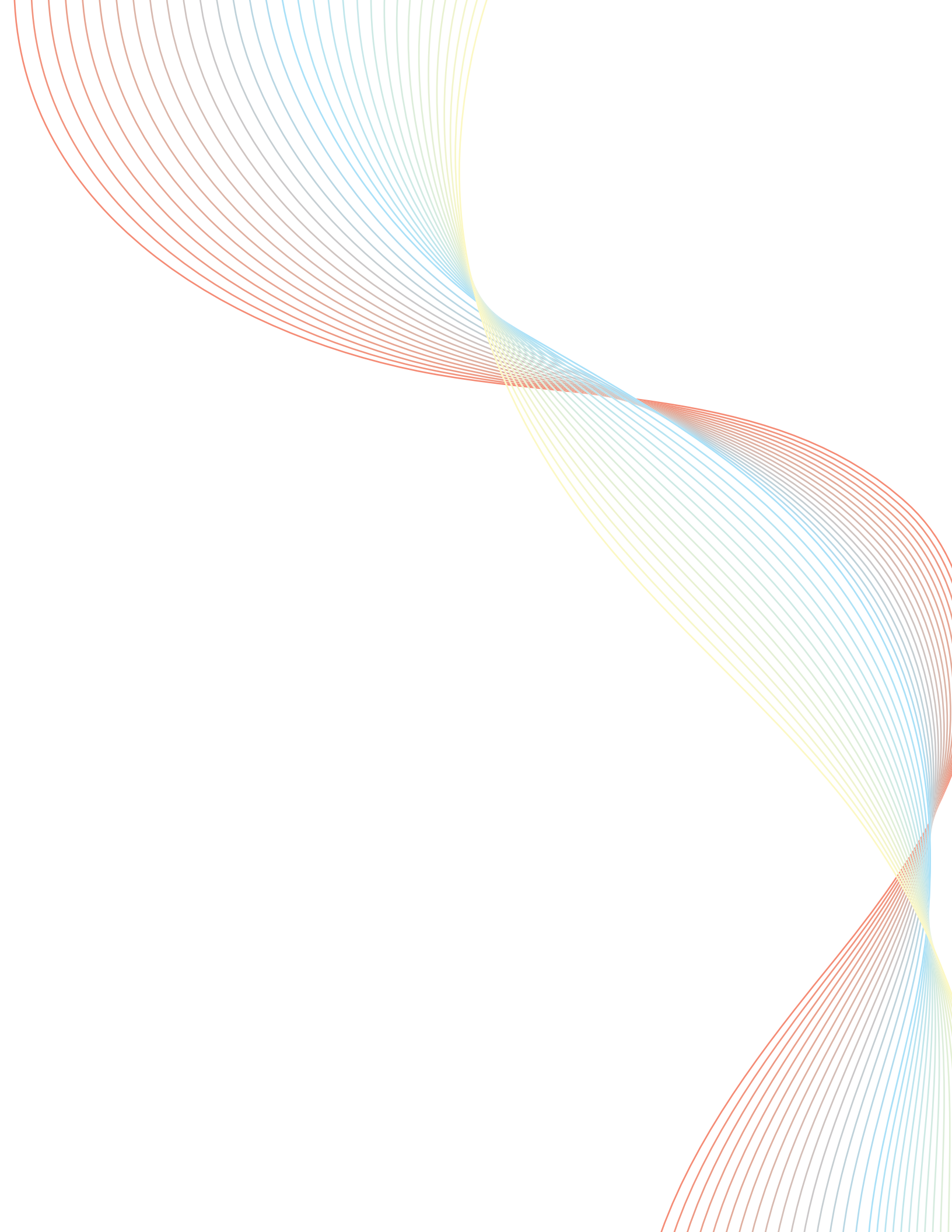
The figure below shows the four strategic thrusts, how they are connected and supported through an enabling environment, towards national development and empowering people.

Figure 2.1: Transformation 2.0: A Digitally Empowered Nation –
The Philippine Digital Strategy 2011-2016





3. TRANSPARENT GOVERNMENT & EFFICIENT SERVICES DELIVERY



TRANSPARENT GOVERNMENT & EFFICIENT SERVICES DELIVERY

3.1 WHY E-GOVERNMENT AND E-GOVERNANCE IS IMPORTANT

The strategic thrust for e-Government and e-Governance will be anchored on the administration's declared social and governance agenda. Anticipated benefits of e-Government include greater efficiency, improved services, better accessibility of public services, and more transparency and accountability. These in turn will spur economic activity and improve social service delivery, thus improving standards of living. An ICT-enabled transparent government will empower citizens and stakeholders, and allows them to have secure electronic transactions and access to information and services anytime, anywhere.

This strategic thrust focuses on the benefits of e-Government to the citizen such as ease of access, ease of use, efficiency and quality of services rendered, and establishment of privacy and security standards. This ready access to government services and to information that is relevant to the citizen is especially desirable in the wake of recent international trends allowing wider access to public data.

e-Government deals with the development of online services to the citizen, providing services such as: e-tax; business registration; birth, wedding, and death certificates; voting or public opinion polling; passport or identification renewal; social benefits; licenses and approvals, planning or business applications; or e-health. Also, included are networked ICT systems supporting various levels of government in the administration and delivery of mandated services.

In recent years, e-Governance has been used increasingly in reference to a wider concept that defines and assesses the impacts that technologies are having on the practice and administration of governments, and the relationships between public servants and wider society, such as dealings with the elected bodies or outside groups such as non-government organizations, or private sector corporate entities. e-Governance is understood to extend the scope by including citizen engagement and participation in governance. E-Governance is the use of ICTs as a tool to allow greater online participation of citizens in the work of government.

As more and more e-Government applications and information go online, new dimensions and opportunities for innovation open up in terms of using ICT towards more responsive governance. As a small example, a government connected to its citizens makes it possible to build consensus or gather feedback within a much shorter time period while covering as wide an audience as necessary.

Through the Internet, people from all over the country can interact with politicians or public servants and make their opinions count. Blogging and interactive surveys may allow politicians or public servants to see the views of the people they represent on any given issue. Chat rooms can place citizens in real-time contact with elected officials, allowing voters to have some impact and influence on their government.

Government also has the opportunity to follow citizens to monitor satisfaction with the services they receive. Through ListServs, RSS feeds, mobile messaging, micro-blogging services, blogs and services such as Twitter, government and its agencies can share information to citizens who share common interests and concerns. There may also be an environmental benefit in that transit to government agencies is minimised. For the purpose of this strategy, we will use the term e-Government, comprising the e-Governance concept where applicable.

TRANSPARENT GOVERNMENT & EFFICIENT SERVICES DELIVERY

Comparing the country with other nations in Southeastern Asia in Table 3.1, our e-Government ranking is slightly above the regional average as well as world average. However, our world ranking dropped from 66 in 2008 to 78 in 2010, indicating we need to strengthen our efforts in this area to keep pace and improve our position.

Table 3.1 – Philippines e-Government ranking vs. select SEA countries

e-Government Development in South-Eastern Asia				
Country	e-Government development index value		World e-Government development ranking	
Country	2010	2008	2010	2008
Singapore	0.7476	0.7009	11	23
Malaysia	0.6101	0.6063	32	34
Brunei Darussalam	0.4796	0.4667	68	87
Thailand	0.4653	0.5031	76	64
Philippines	0.4637	0.5001	78	66
Viet Nam	0.4454	0.4558	90	91
Indonesia	0.4026	0.4107	109	106
Cambodia	0.2878	0.2989	140	139
Myanmar	0.2818	0.2922	141	144
Lao People's Democratic Republic	0.2637	0.2383	151	156
Timor-Leste	0.2273	0.2462	162	155
Sub-regional average	0.4250	0.4290		
World average	0.4406	0.4514		

Source: UNPAN 2010

e-Government has four key dimensions that are addressed in the key actions below:

- Outreach – Government to Business (G2B), Government to Citizen (G2C) and Government to Government (G2G) or interagency government services;
- Governance – IT-Backoffice, Re-engineering public processes;
- Policy – Institutional models of e-Government and laws on e-Government security; and
- Infrastructure – Including mobile and broadband.[ii]

3.2 MAIN OBJECTIVES

The main objectives of this "Transparent Government and Efficient Services Delivery" strategic thrust are the following:

- Enhance public trust in government;
- Enhance citizen (both men and women) participation in governance;
- Improve government's public online services;
- Improve transparency and efficiency of government operations;
- Increase innovation in e-Governance, government operations and e-Government; and
- Improve country's competitiveness (through more efficient government operations).

The objectives all converge around the overarching aim of the government to be more responsive to its citizens, businesses and civil society, provide better public services at lower costs, and increase trust through openness and transparency. This will empower Filipino men and women to expand their participation in government and governance.

3.3 MEASURABLE TARGETS

Specific measurable targets are as follows:

1. Increased citizen participation in governance and innovation
   - The UN e-participation Index, measuring the level of e-information, e-consultation and e-decision-making opportunities provided by government, shall increase from 24.49 in 2008 to above 40.00 by 2016; and
   - Innovation will be assessed through an annual award for innovation in governance and excellence in public service delivery.

2. Public online services become increasingly interactive, transactional and ultimately networked
   - At least 50% of government websites include interactive services (up from 30.59% in 2010)[iii] by 2016;
   - At least 20% of government websites include transactional services (up from 4.61% in 2010)[iv] by 2016; and
   - Government has laid the foundation for a networked presence[v] through the establishment of citizen-centric portals that are grouped by citizen interest in public services and combine online services from several departments and agencies.

3. Enhanced public trust and increased transparency in government
   - The Philippines improves its score of 2.4 in 2010 from the Transparency International Survey by 2016; and
   - Annual expansion in the volume of government data published online, in particular on procurement, budget allocation and disbursements.

4. Improved efficiency in government operations
   - Efficiency can be measured through cost and time savings for a particular government operations or

delivering a public service. Each national government agency (NGA) shall identify at least two specific government operations and public services where they plan to achieve time savings (e.g., time it takes to register business etc.) and/or cost savings – each department shall set their own targets;

- The e-Government development index value of 0.4637 in 2010 (UNPAN) is targeted to increase to 0.56 by 2016; and
- Increase in the number of ICT skilled civil servants, as measured by competency standards, by 10% of the baseline yearly up to 2016.

5. Enhanced competitiveness of the country

- The target is to improve the country's ranking from 148 in 2010 to 130 by 2016 of the World Bank's Ease of Doing Business survey; and
- Improved feedback from private industry, as measured via surveys, in quality of enabling environment for business in the country.

Table 3.2 – Targets: Transparent government and efficient services delivery by 2016

Citizen participation & innovation	Public online services	Public trust and transparency	Efficient government operations	Enhanced competitiveness
UN e-participation Index to above 40.00 Annual award for innovation in governance	50% of websites include interactive services 20% of websites include transactional services Establishment of citizen-centric portals	Transparency International Survey index of 4.0 Increasingly public data online	Each NGA has two specific government services with time or cost savings e-Government development index value of 0.56 (UNPAN) Increase in ICT-skilled gov't workers 10% annually	Ease of doing business ranking of 130 (World Bank survey) Improved enabling environment for private business
Objectives that are supported through the achievements of the targets				
Citizen participation Innovation	Improve online services Empowerment	Trust & transparency	Improve online services Efficiency Competitiveness	Competitiveness

3.4 KEY ACTIONS

The following table provides an overview of the key actions which will make the critical difference for providing a transparent government and efficient delivery of services. This plan will provide the direction in achieving our objectives and targets set above.

Table 3.3: Description of Key Actions: Transparent Government and Efficient Services

ACTION	DESCRIPTION
1. Create high-level leadership to direct, coordinate and implement e-Government and e-Governance	> Create Cabinet-level multi-stakeholder council for eGovernment/eGovernance leadership and include private sector experts, civil society and academe > Institutionalize the CIO function in National and Local Government > Establish CIO Council > Coordinate through CIO Council various e-Government programs and support agency-level planning > Improve awareness through e-Governance Advocacy and Awards > Encourage and promote e-Government/ e-Governance champions among LGUs, NGAs, NGOs and private sector > Expand awareness of the cabinet level council and CIO Council among stakeholders and the public
2. Establish, upgrade and improve government ICT infrastructure, systems and ICT-related procedures to allow for integrated government operations	> Procure Government Administrative Intranet and Virtual Private Network using Public-Private Partnerships (PPPs); and managed under a unified and joint approach > Adopt Government Interoperability Framework for all systems and across government agencies and vertical levels of government (i.e., national, provincial and local) based on a government wide information system strategic plan > Adopt and actively promote e-Government technical policies, procedures and standards; where appropriate through the CICT Bureau of Product Standard (BPS) Joint Technical Committee on ICT Standardization > Establish joint contact center for government services, consider outsourcing > Develop consistent data standards and procedures which allows sharing of government data among agencies and reduce duplication > Establish an e-Government data center > Incorporate gender and green ICT considerations in design of government ICT systems and infrastructure > Rationalize ICT Procurement rules and regulations and guidelines

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ACTION	DESCRIPTION
3. Improve organizational, inter-governmental coordination, personnel and capacity issues within government to use ICT for better government operations and public service delivery	> Undertake assessments of government agencies using internationally recognized tools (e.g., ADB e-Governance maturity model) > Evaluate resource requirements and set priorities for systematic change of government management systems towards the E-Government model > Develop and promote Information Systems Strategic Planning as ICT blue prints for NGAs and LGUs based on a government wide information system strategic plan > Assess ICT competency levels of government workforce using national competency standards & implement a National ICT Competency Development and Certification Program (5-year program) for various ICT-related job roles > Establish ICT and e-Government training centers in Luzon, Visayas and Mindanao > Identify and develop required G2G services for NGAs and local government units (LGUs) > Create and promote open source applications for NGAs and LGUs where appropriate and provide appropriate training > Use Geographic Information System (GIS) technology and maps to improve and address tax collection, land use, climate change issues > Encourage more environmentally friendly ICT design and use in government (green ICT)
4. Enhance e-Government services and applications for G2B and G2C through citizen-centric interest clusters	> Develop a gender responsive Citizens' Internet Portal using PPP > Strengthen eSerbisyo, eBayad, eBPRNS, e2M Customs, eRPTS, eBPLS, ePassport, GIFMIS, PhilGEPS[vi] and similar existing services > Create additional services based on citizen demand, group them around interest clusters & coordinate service delivery across several agencies > Use the existing e-Government Fund for finance, management & monitoring
5. Increase the provision of accessible and affordable government data to the public	> GOP agencies expand volume of online data and information made available to public in an open format, in particular on procurement, budget allocation and disbursements > Open format to allow the private sector, NGOs, academe and civil society to use that data to add value (through analysis, services and applications build on that data, additional information, etc.) and contribute own content > Work for the passage of the Freedom of Information Act

TRANSPARENT GOVERNMENT & EFFICIENT SERVICES DELIVERY

1. Create high-level leadership to direct, coordinate and implement e-Government and e-Governance

International experience has clearly shown that e-Government can only be successfully implemented if there is high-level leadership and a coordinating entity. While we developed the Government Information Systems Plan (GISP) many years ago to guide e-Government implementation, the Plan was not sufficiently anchored within government leadership. While there are several institutional models for e-Government implementation, many countries around the world adopt an approach involving a high-level multi-stakeholder group comprised of key ministries. This sometimes even includes the President or a group reporting directly to the President. It is headed by a key ministry such as Finance or Economy or Ministry of Public Reforms and often includes experts and representatives from academe, private sector and civil society. Thus, a Cabinet-level council for e-Government leadership shall be created and include private sector experts, civil society and academe.

The Council will coordinate and oversee the implementation of e-Government across various NGAs, and ensure that strategic objectives are met as part of a clear mandate. The Council will have to decide if a detailed information systems plan is required, whether the 2000 GISP shall be updated, or whether a few targeted and strategic initiatives are all that is required to move e-Government forward. Furthermore, the Council may want to tap experts, industry advisors and consultations to validate its plans. It shall be part of the e-Government's Council's mandate to improve awareness of benefits of e-Government among NGAs, provincial and local government and for the wider public. Fulfilling its advocacy role can include e-Government awards and to encourage e-Government champions among LGUs, NGAs, non-government organizations (NGOs) and private sector.

Another vital element of establishing our e-Government leadership is to institutionalize the CIO function – starting with a CIO for each department, or ICT officers in government attached agencies and bureaus, and then followed by CIOs or ICT Officers in Local Government. This will then allow the creation of a government CIO Council (as provided for in the draft DICT Bill), which shall meet regularly and be chaired by an appointed Government CIO. While the Cabinet e-Government Council is responsible for the overall direction, policy and financing of coordinated e-Government development, the CIO council will be responsible for the technical aspects regarding protocols, procedures and implementation, including interoperability framework, e-Government security as well as infrastructure and data protection.

Communications and advocacy efforts are needed to expand awareness for the governance structure proposed in this section – at the cabinet level and for the CIOs. The need for these entities and the service or functions that they provide for the ICT sector and for e-Governance should be properly disseminated to the relevant stakeholders and the general public to strengthen support for and the success of these bodies.

2. Establish, upgrade and improve government ICT infrastructure, systems and ICT-related procedures to allow for integrated government operations

Our government still lacks an integrated ICT infrastructure and integrated or interoperable systems that allow for optimal inter-agency cooperation, support for all civil servants and efficient public service delivery.

The government will use PPPs and competitive processes to get the required quality and cost-efficient services from the private sector. At the same time – as a major user of and demand driver for ICT – the government will help stimulate the local industry, local capacity and reduce cost by leveraging private sector investment. The Government Administrative Intranet is intended to provide government staff with network-based collaborative tools for sharing data and application tools to improve government communications and work efficiencies. The user group for the Government Administrative Intranet will be civil servants at all levels and in all regions of the country.

The Government Administrative Intranet will be facilitated through a Virtual Private Network (VPN). This provides increased information security and allows remote access for government users to the Intranet. The VPN will use existing commercial communications networks. This will be augmented with building physical network extensions in some places where there is no last mile access for government offices or existing capacities are not sufficient.

The implementation will take place under PPP arrangements. It will be imperative that the PPP is a true win-win scenario for both government and private sector partners. The government will require an experienced management unit to negotiate, procure, manage and monitor the Intranet and VPN service provision. This Unified Government Network Management unit could be comprised of a team of experts from DOST, CICT and DBM, and possibly supplemented by private sector procurement and project managers.

For software and applications, the government will develop common systems and take advantage of latest trends like cloud computing (software and applications get shared via the Internet rather than having to be installed on every PC) which can especially help LGUs lower their software and maintenance costs.

Other important systems shall include a joint government contact center and an e-Government data center. Outsourcing options for those shall be considered and the management of the outsourcing procurement, contract management and monitoring can also be done through the unified government management unit.

The above will need to be supported by appropriate technical policies, standards and procedural guidelines, including a Government Interoperability Framework for all systems and across government agencies and vertical levels of government (i.e., national, provincial and local). Interoperability is defined as the ability of information systems to operate in conjunction with each other, encompassing communication protocols, hardware, software, application, and data compatibility layers. Interoperability is key to the delivery of e-Government services. The public expects to be able to access increasing numbers of government services and applications through various channels such as the Internet, the telephone or wireless Internet. In order to make this technically possible, applications and services need to be 'interoperable.' Interoperability is easier to achieve if the underlying technology is standardised. Interoperability is also critical in the development of e-Government applications that cut across agency boundaries. To this end, a draft Philippine Government Interoperability Framework has to be formally adopted.

Furthermore, consistent data standards and procedures are to be developed to allow sharing of government

data among agencies and reduce duplication in data collection efforts. Lastly, ICT procurement rules and regulations and guidelines are rationalized to ensure that government agencies can upgrade their ICT infrastructure faster and abreast with new technologies.

3. Improve organizational, inter-governmental coordination, personnel and capacity issues within government to use ICT for better government operations and public service delivery

While key action #2 addresses the hardware, software, applications and other IT issues, there is also a need to focus on the human element of improving and enhancing e-Government services.

Equipping the government with ICT is not an end in itself; the purpose is to make it better able to serve the people. ICT can facilitate communication and information sharing, it can create cost and time savings over time, and thus make operations and services more efficient, freeing up time and resources for higher-value activities. This also increases the country's competitiveness. However, ICT is a tool, and requires the human element to achieve these results. In addition to motivation, incentives and aspirations, ICT also requires changes in how things are done within departments and agencies and across them.

A large and critical element of e-Government development is about the re-engineering of government work processes and the improvement of the required IT-Back-office procedures. The government will start with assessments of government agencies using internationally recognized tools (e.g., ADB e-Governance maturity model), and organizational and operational reviews with civil servants and staff. This will assist in informing staff, goal-setting and identifying in which areas ICT can improve internal work processes, intra-agency co-operation and public services. This would also be an opportunity for government to incorporate and promote green ICT practices in the government ICT system by disseminating information on how system administrators and users can save on energy consumption and properly dispose of unusable IT equipment or components.

The second critical element is capacity building and training for civil servants. Enhanced ICT competency for public sector workers is required, though it constitutes a significant cost factor in e-Government projects and many governments have committed extra funding for such training. A National ICT Competency Development and Certification Program (5-year program) will be implemented; together with the development and/or adoption of ICT competency standards as well as the assessment of ICT competency levels of government workforce as support initiatives. Tailored e-Governance competency-based training programs will be conducted, taking advantage of appropriate existing material and distance learning technologies and tools to accompany face-to-face training where required. ICT certification exams for different ICT-related job roles in government will also be developed as well as ICT and e-Government training centers in Luzon, Visayas and Mindanao.

The third main element to enable government agencies to work better together and more efficiently covers ICT tools and applications. Key activities in this area will include identification and development of required

G2G services for NGAs and LGUs, create and promote open source applications for NGAs and LGUs and make use of GIS technology and maps to improve and address tax collection, land use, climate change issues, among others.

The government shall also endeavour to be a model user in regards to more environmentally friendly ICT procurement, usage and disposal. Specific programs can be instituted to help raise awareness among both government procuring personnel and private sector suppliers on ICT design and components that consider environmental implications.

4. Enhance e-Government services and applications for G2B and G2C through citizen-centric interest clusters

Most NGAs today have their individual webpages, and less than 5% allow the citizens to transact directly with the agency over the Internet. In order to serve citizens and business better, the government will:

- Enhance the interactive and transactional elements of their online service provisions; and
- Ensure more cooperation among departments and agencies so online services will be delivered to citizens and business in a way that fits their needs, transcending agency boundaries.

An important element to accomplish this is the Citizen Internet Portal. It will provide citizens and businesses with a single window for information, downloadable forms and interactive communications with government agencies, and e-Government transactional applications such as online registration and licensing of businesses, collection of tax forms, e-procurement and payments, etc.

The Citizen Internet Portal shall be established through a PPP to leverage expertise from the private sector, improve service reliability, create cost savings and free up government staff for government work and public service delivery rather than operating portals. The Citizen Internet Portal shall incorporate and build on existing services and initiatives such as eSerbisyo, eBayad, eBPRNS, e2M Customs, eRPTS, eBPLS, ePassport, GIFMIS and PhilGEPS.

The second important element is the concept of citizen-centric interest clusters and organizing e-Government services around these. This means that public services from several agencies are grouped together under a single topic of interests. These can be organized by subject, life events and to whom the public services are addressed. Examples are as follows:

- By Subject: Education and Training, Employment, Health, Housing, Immigration, Income Assistance, Legal Assistance, Personal Documents, Savings Plans, Starting a Business, Travel;
- By Life events: Finding a Job, Raising a Family, Having a Baby, Retirement Planning, Starting a Business; and
- By groups: All Citizens, Indigenous Peoples, Employers, Families and Children, Newcomers to Country, People with Disabilities, Seniors, Veterans, Youth and Students.

In order to become more citizen-centric, the government shall review the following:

- In what type of key government services or information are most/many Filipinos interested? Are there special considerations for women or marginalized sectors?
- Which agencies could be grouped together into "clusters of interest" for citizens?

The government will start with the most in-demand services by citizens and create clusters and shared agency cooperation around that. This will have a demonstration effect and create traction faster for other departments, NGAs and their online services to follow.

There will also be a priority on e-Government service delivery for basic social services such as health, education, nutrition, housing, social protection (social insurance, welfare), reducing poverty and creating employment as well as protecting the environment.

Underlying the development of these priority front-end applications shall be a coherent strategy and architecture. This includes the foundational activities of database organization or build-up, and operations process reengineering for increased efficiency and interoperability.

Furthermore, considering the high proliferation of mobile phones and use of text messaging, including among the poor and rural population (and the low Internet and computer penetration), e-Government services and applications shall also be available as much as possible through mobile phone applications

5. Increase the provision of accessible and affordable government data to the public

A key trend internationally is the increase of government data that is made publicly available. The government's agenda of increasing transparency and trust in government also encourages more provision of government data, in particular on procurement, budget allocation and disbursements. The basis for increased provision of government data is the Freedom of Information Act and an open data policy.

That data shall be made available in an open format. The open format will allow the private sector, NGOs, academe and civil society to use that data to add value (through analysis, services and applications build on that data, additional information, etc.) and contribute own content.

It is important that standards and procedures are developed to ensure that data shared publicly does not infringe on privacy, national security or other data protection concerns.

The government will start with selecting the most ready agencies to share data and also the ones which have the most value added for being shared with the public. Data format and presentation will consider the needs of users and the public (i.e. sex disaggregated, affordable).

3.5 INSTITUTIONAL IMPLEMENTATION ARRANGEMENTS & FUNDING

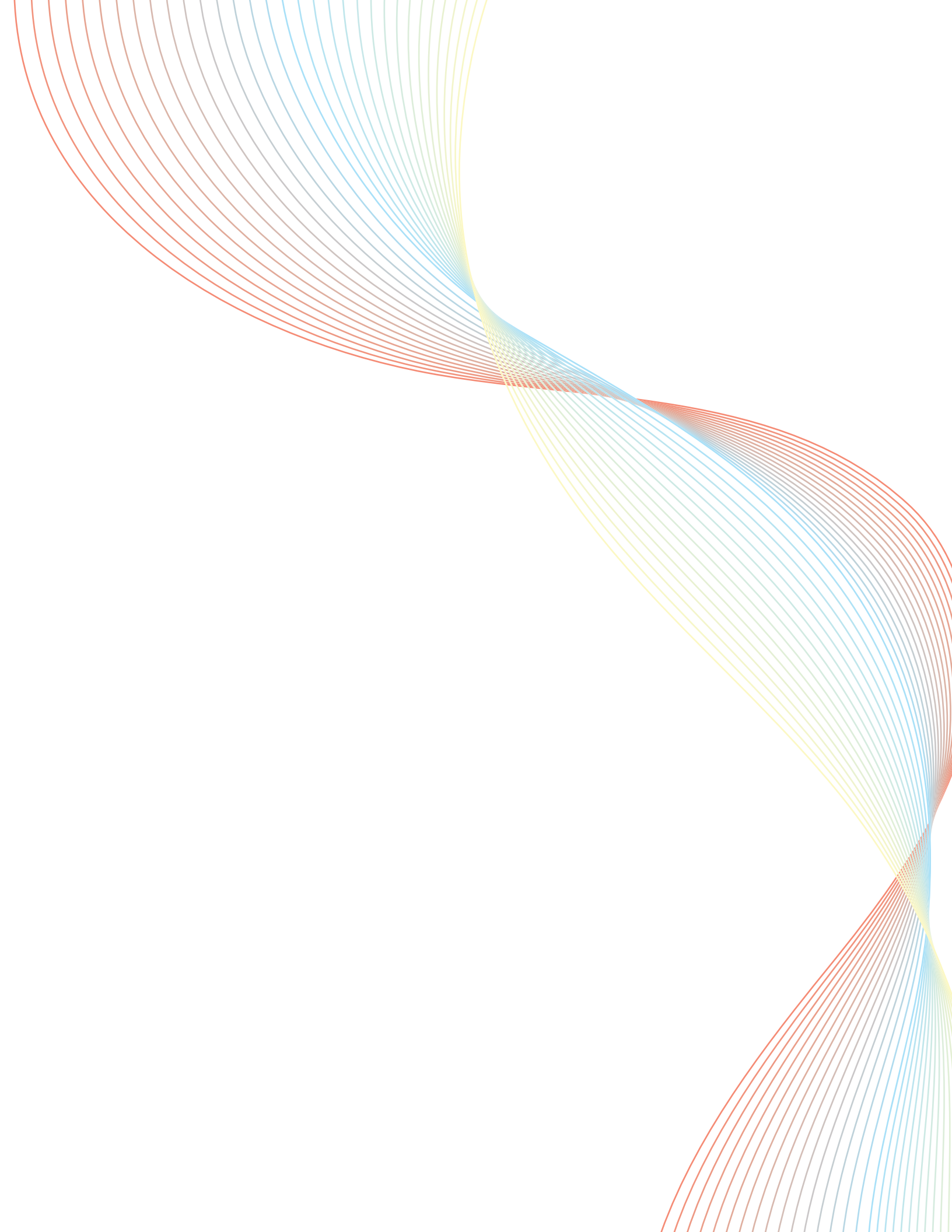
Table 3.4 –Institutional implementation arrangements & funding: Transparent government & efficient service delivery

ACTION	LEAD AGENCY & KEY PARTNERS	FUNDING APPROACHES
Create high-level leadership to direct, coordinate and implement e-Government and e-Governance	> Office of the President > Congress and Senate	> NA
Establish, upgrade and improve government ICT infrastructure, systems and procedures to allow for integrated government operations	> Egov Cabinet Council, CIO Council > CICT > DOST	> PPP (partial government funding, partial private sector investment and user fees) > ODA
Improve organizational, inter-governmental coordination, personnel and capacity issues within government to use ICT for better government operations and public service delivery	> Egov Cabinet Council, CIO Council > CICT, DOST, DOH, DTI, NEDA, DOF, CSC, COA, > Academe	> Government funding > ODA
Enhance eGov services and applications for G2B and G2C through citizen-centric interest clusters	> Egov Cabinet Council, CIO Council > CICT > DTI > DBM	> PPP (partial government funding, partial private sector investment and user fees)
Increase the provision of accessible and affordable government data to the public	> Egov Cabinet Council > Academe, civil society	> Government funding > ODA

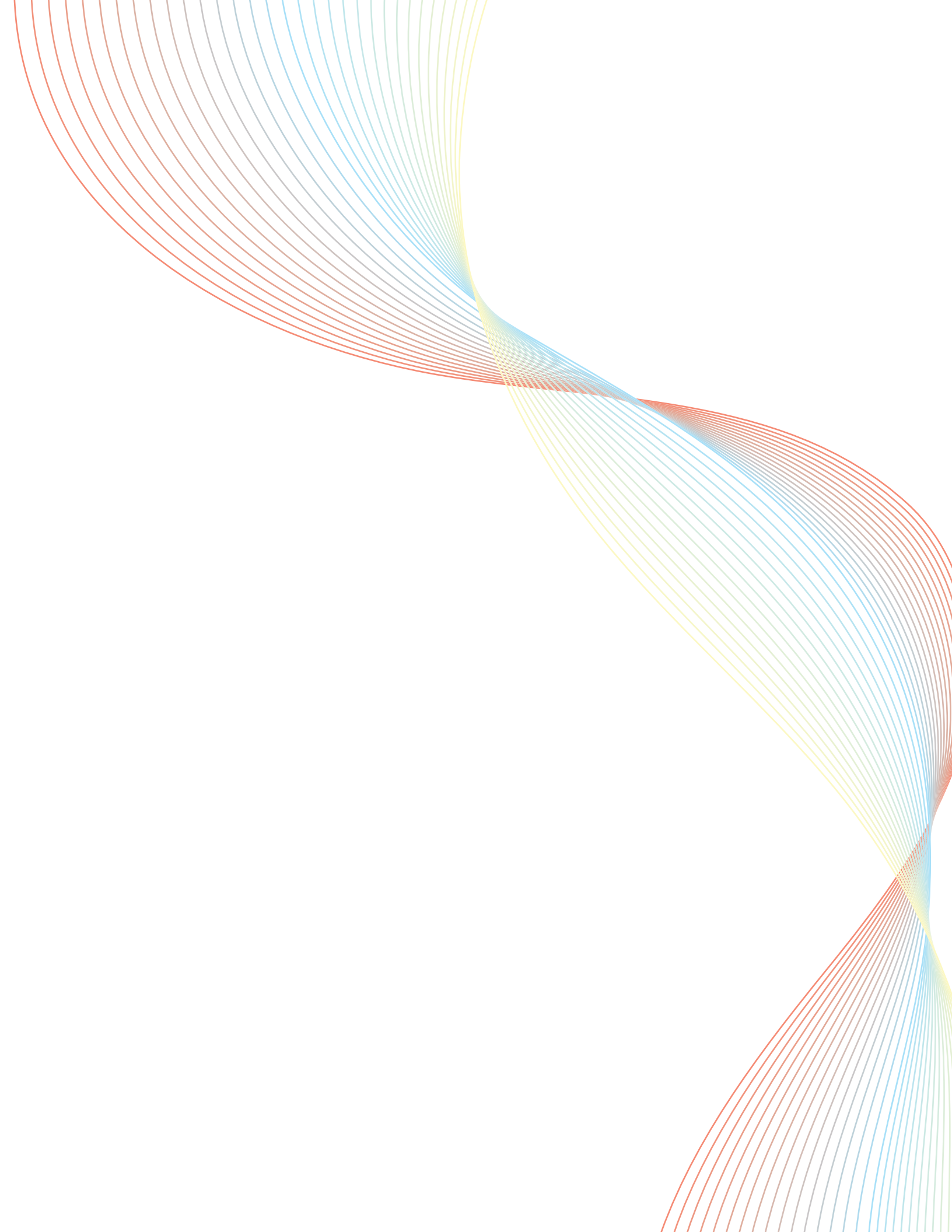
3.6 MILESTONES: MEASURING PROGRESS

Table 3.5 – Milestones for key actions: Transparent government & efficient service delivery

ACTION	KEY MILESTONES	2011	2012	2013	2014	2015	2016
Create high-level leadership to direct, coordinate and implement e-Government and e-Governance	eGov Council	●					
	CIO Council		●				
	CIO in LGUs			●			
Establish, upgrade and improve government ICT infrastructure, systems and procedures to allow for integrated government operation	Govt Intranet & VPN		●				
	Govt Inter-operability framework			●			
Improve organizational, inter-governmental coordination, personnel and capacity issues within	Competency Standards	●					
	Assessment		●				
	Training			●	●	●	●



4. INTERNET OPPORTUNITIES FOR ALL PEOPLE



INTERNET OPPORTUNITIES FOR ALL PEOPLE

4.1 WHY INTERNET FOR ALL IS IMPORTANT

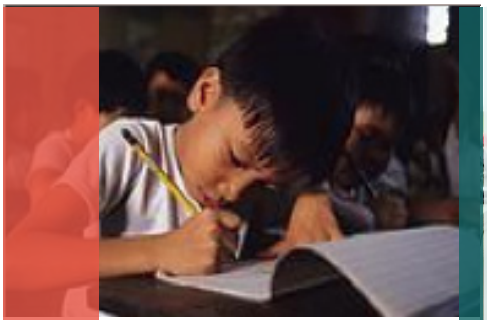
Many of us today use the Internet for a variety of reasons: e-mailing to connect with friends and family, for business and work correspondence, web-browsing for news, research and entertainment, and increasingly for richer media and applications, such as watching online TV, posting videos and photos, as well as creating Internet content through blogs and other interactive fora. Being able to use the Internet has become an important necessity to any social and work life.

However, for many different reasons, there are also many Filipinos who are not able to access the benefits the Internet has to offer. Some cannot afford the Internet or computers; others do not have the skills to use the Internet; and there are parts of the country where there is no Internet service or even electricity available, such as in more rural and missionary areas. Furthermore, there are some groups that are faced with unique barriers that prevent their active use of the Internet such as persons with disabilities or indigenous people. Lastly, Internet speeds vary and without minimum broadband speeds, the Internet experience is less positive and, in some cases, makes it impossible to enjoy some of the higher-end applications.

Not only is the possibility and ability to use the Internet important for individuals, but also for countries as a whole. Governments around the world increasingly view broadband as the "fourth utility" alongside water, heating and electricity. Recent research shows that broadband fosters GDP growth, creates jobs and stimulates innovation, while also enabling improvements in education, health care and other social services. In addition, in our globalized world, the connectedness and Internet capabilities of a country are important elements for its competitiveness.

Expanding the Internet, including to rural areas, leads to new opportunities for nonagricultural employment, better paying agricultural jobs and greater overall productivity. Access to the Internet also fosters small and micro-business growth, allows citizens in remote areas to work from home, provides greater access to crop market prices and enables rural businesses to compete more effectively in world markets. Research has shown that this type of Internet use helps to reduce poverty by increasing income and reducing costs for the poor. Internet-enabled technologies such as video-conferencing can also reduce travel and congestion.

Thus, creating Internet opportunities for all ensures that the Philippines has an inclusive growth and helps eradicate poverty.



4.2 MAIN OBJECTIVES

The main objectives of this "Internet Opportunities for All" strategic thrust of the PDS are the following:

- Improve digital literacy and competences (this will also be addressed under e-Government for the public sector, and under the strategic thrust for Investing in People: Digital Literacy for All)
- Reduce geographical digital divides & promote inclusive Internet development;
- Enhance Internet accessibility for people of all abilities, gender and social standing;
- Ensure affordability of the Internet;
- Promote attractive and useful digital content (especially linked to e-Government services and enabling the Filipino industry to develop digital content);
- Improve Internet speed (broadband);
- Ensure secure, reliable and safe online experience for users;
- Ensure sustainable and environmentally friendly ICT development;
- Protect data privacy where appropriate; and
- Increase global competitiveness for industry and business.

The objectives all converge around the overarching aim to ensure that the government plays its part to make the Internet user-friendly and allow all groups of Filipino society to take advantage and benefit from Internet opportunities, promoting digital inclusion as well as competitiveness.

4.3 MEASURABLE TARGETS

1. Improved and cost-efficient broadband service delivery, network infrastructure expansion and upgrades through increased competition

- The Herfindahl-Hirschmann Index (HHI), measuring the competitiveness of the telecom market, is lowered from currently above 4000 to below 3500 (around 20% reduction) by 2016;
- Average prices for basic broadband Internet are reducing annually by at least 5%; and
- Investment in infrastructure expansion and development has increased by at least 10% annually.

2. Universal broadband Internet service at consumer level

- For business: All Central Business Districts to have broadband coverage with average download speeds of 20 Mbps available for customers by 2016; and
- For households: Available broadband with average download speed of at least 2 Mbps to be available for 80% of customers throughout the country by 2016 (i.e., broadband coverage of 80% of the population).

3. Universal basic broadband Internet by 2016 to all barangays through publicly shared access

- Each barangay to have at least one public Internet center (e.g., Internet café, Community e-Center or similar) that provides reliable Internet service, 80% of which have basic broadband (2 Mbps) by 2016. The remaining 20% will have the service by 2020; and
- CeCs shall run ICT awareness campaigns throughout their communities demonstrating how people can make use of ICTs for their benefit at least once a year. Furthermore, CeCs shall offer and promote ICT training for community members.

4. Universal broadband Internet access for public schools by 2016

- 100% of High Schools provided with broadband (at least 2 Mbps) by 2016; and
- 80% of Public Elementary Schools provided with broadband (at least 2 Mbps) by 2016.

5. Secure, reliable ICT infrastructure and safe online experience

- Appropriate online consumer protection has been established by 2016 including awareness and education on cybercrime;
- Data security and privacy regulations are in place and are enforced by 2016;
- Cybercrime laws are in place and a special task force within the police exists, is trained and pursues cyber crimes by 2016; and
- Coordination measures and procedures among stakeholders are in place to protect vital ICT infrastructure by 2016.

Basic broadband, defined here as 2 Mbps download speed, shall be reviewed annually in light of market and technology developments and updated if necessary, i.e., what is a feasible basic broadband speed to be available throughout the country.

INTERNET OPPORTUNITIES FOR ALL PEOPLE

The specific targets are summarized in the table below:

Table 4.1 – Targets: Internet opportunities for all people

Improved, cost-efficient service delivery, network infrastructure expansion & upgrades	BASIC BROADBAND INTERNET			Secure, reliable ICT infrastructure & online safety
	Barangays	Schools & other public institutions	Consumers	
Herfindahl-Hirschmann Index lowered to below 3500 (around 20% reduction) Average prices for basic broadband Internet reducing at least 5% annually Investment in infrastructure expansion, especially into rural areas, increased by at least 10% annually	80% of barangays have Internet through CeC (2 Mbps), incl. awareness campaigns & training	100% of high schools & 80% of elementary schools (2 Mbps) 80% of other public institutions 100% of govt. offices	All central business districts have available download speeds of 20 Mbps 80% of households have access to 2 Mbps	Online consumer protection established Data security and data privacy regulations in place and enforced Cybercrime laws in place; police has special cybercrime task force Measures & procedures in place to protect vital ICT infrastructure
Objectives that are supported through the achievements of the targets				
Competitiveness Digital inclusion Affordability	Digital literacy Digital inclusion Affordability	Digital literacy Digital inclusion Competitiveness	Competitiveness Internet speed Digital inclusion	Safety & security Data privacy

4.4 KEY ACTIONS

The following table provides an overview of the five key actions, which will make the critical difference for creating Internet opportunities for all people in the Philippines. This plan of action will bring us closer to our objectives and help to achieve the targets set above.

Table 4.2 – Description of key actions: Internet opportunities for all people

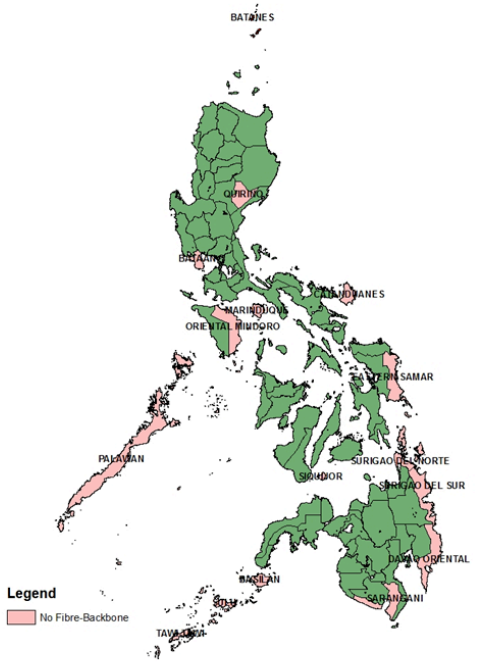
ACTION	DESCRIPTION
1. Craft and implement a national broadband policy	> Create enabling environment for broadband development & use > Promote infrastructure sharing & leveraging existing backbone, including from alternative infrastructure providers such as power companies and cable TV > Provide incentives for private sector investment, in particular for rural and unserved areas (incl. incentives review) & harmonize/rationalize laws re incentives at LGU level > Develop open access backbone policy > Promote migration to Next Generation Networks (NGN) > Assess existing broadband coverage and service levels & continuing data collection/assessment updates > Broadband affordability measures > Evaluate UASF initiative > Include special measures to encourage broadband use by women > Include digital capacity development measures (see also INVESTING IN PEOPLE: DIGITAL LITERACY FOR ALL)
2. Institutionalize sustainability of publicly shared Internet access and scale it up	> Assign coordinating role and approach to PhilCeCNet; work also with Internet café association > Review of experience, best practice and success factors in environmentally friendly public Internet access > Capacity building for CeC workers on business & entrepreneurship > Focus on areas without CeC, Internet café or other public Internet center > Accreditation of Internet cafes as CeC in areas without CeC as well as e-Eskwela and other e-center programs to double as CeCs for their improved sustainability > Creating single market opportunity through CeC network > Information and Education campaign re Internet use and benefits through CeCs and accredited Internet cafes

ACTION	DESCRIPTION
3. Provide all remaining public high schools and elementary schools with broadband Internet services	> Inventory of existing broadband connectivity and lack thereof of all public secondary and elementary schools > Coordinated effort among concerned agencies to improve broadband connectivity among public schools > Using purchasing power and creating cost savings by offering one large or several large (regional) contracts to private sector operators to provide broadband connectivity to schools and build last mile where needed > Regional or provincial help desk and support centers for schools > Other sustainability (maintenance, upgrades, etc.) measures
4. Implement security measures (infrastructure, data and cybercrime) and privacy protection	> Establish measures & procedures that protect critical information infrastructure (security and robustness) > Create online consumer protection incl. consumer awareness and safe computing practices, industry self-regulation and government monitoring > Create data security and data privacy regulations > Establish cybercrime laws and strengthen special cybercrime task force within the police > Promote proper, responsible and safe use of the Internet among the public and consumers > Expand awareness among the public for policies and regulations on ICT security and privacy
5. Modernize ICT policies, laws and institutions	> Develop new communications policy and law (addressing in particular convergence of industry) to replace Act RA 7925 > Competition Policy for ICT sector > Create DICT > NTC Strengthening Law > Improve Spectrum Management > Transition to Digital TV > Review of postal services policy > Develop Internet Governance Policy > Create a comprehensive policy framework and implementation plan addressing e-waste, including public education

1. Craft and implement a national broadband policy

A national broadband policy's objective is typically to accelerate broadband infrastructure deployment, to ensure that broadband service reaches all parts of the country, as well as to promote the adoption of broadband usage among households, businesses, industry sectors and public/government institutions. It often focuses on identifying and then removing regulatory and other barriers for infrastructure development and broadband uptake, as well as providing incentives. This can include improved spectrum availability, infrastructure sharing, open non-discriminatory access and pricing to backbone facilities; reduced spectrum fees in rural areas, and tax and other financial incentives. Important also are measures for demand stimulation, such as "one laptop per child or household" programs, awareness raising, capacity building and training as well as content development initiatives.

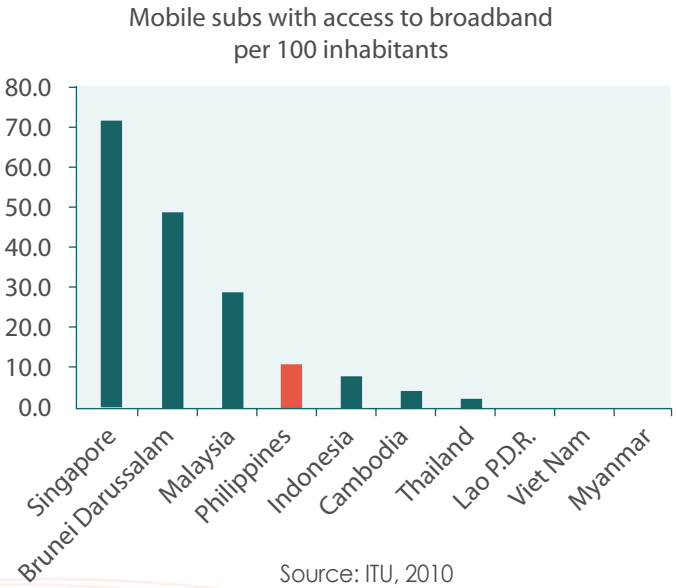
Figure 4.1: Fibre Backbone Network - Philippines



High-capacity fibre-backbone network is particularly important for broadband development. Latest availab competing fibre-backbone networks, 25 provinces have at least one fibre-backbone network, while 17 provinces have no fibre-backbone network (but probably have lower capacity micro-wave backbones – see Figure 4.1 showing provinces in red without a fibre-backbone). The existence of some competitive fibre-backbone networks bodes well for further fibre-backbone development.

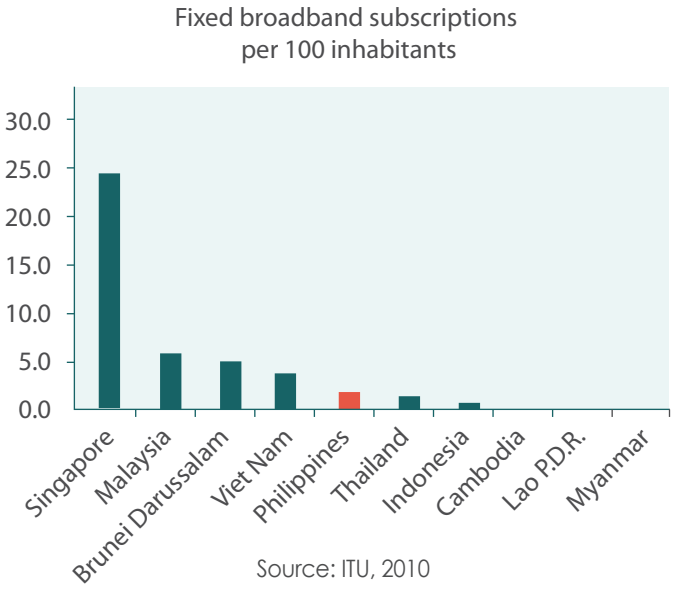
In terms of broadband usage, the Philippines compares well against Thailand, Indonesia and Cambodia (See Figures 4.2 and 4.3 below).

Figure 4.2: Mobile Broadband Usage (by country)



Source: ITU, 2010

Figure 4.3: Fixed Broadband Usage (by country)



Source: ITU, 2010

However, overall penetration is still low with less than 5% fixed broadband penetration and 10% wireless broadband penetration. These figures also show though that a large part of broadband access (last mile) development will be based on wireless technology, as it is often preferred by users and is more cost-efficient.

There is no reliable and up to date data on broadband coverage (i.e., how much of the existing population has access to broadband where they live). But it is safe to assume that many smaller or poorer municipalities and many rural areas do not have broadband service.

This key action – developing and implementing a broadband policy – is necessary because broadband development has become extremely important for socio-economic development of a country. But broadband is less commercially viable in more remote and rural areas. Often these areas are more sparsely populated and thus generate less revenue, while requiring equal or more investment than urban areas. In some cases the rural population is less well-off and thus less people can afford broadband services.

The government will develop a broadband policy that ensures an equitable broadband development including for rural areas and enabling all parts of society.

Data collection initiative

In order to track broadband improvements over time, update targets and policy planning, this initiative will focus on developing a web-based database for broadband. This ideally includes broadband coverage/availability, broadband penetration, broadband prices and broadband average download speeds or similarly useful indicators on a geographically disaggregated basis. Methods and procedures shall be developed that allow timely, easy and cost-efficient updates (at least annually). Options such as industry-sourcing of data with cross-checks through crowd-sourcing and GIS-enabled data shall be explored. The database shall be publicly available and online, and a reasonable usage fee may be considered to cover costs.

Evaluate Universal Access and Service Fund (UASF).

A UASF is a form of public-private partnership and a financing instrument. The deliberate allocation of Spectrum Users Fees to create a Universal Access and Service Fund (UASF) can help to ensure the deployment

and availability of ICT infrastructure and services all over the Philippines, and more particularly in rural and/or unserved communities.

The National Telecommunications Commission already collects approximately PHP 2 billion annually from spectrum users' fees, which are currently remitted back to the National Treasury. The earmarking of these regulatory fees could provide the financing for the upgrading or deployment of the infrastructure, particularly in rural areas, and help to assure universal access to broadband without imposing new or additional burdens on the service providers.

A UASF uses a transparent, accountable and competitive mechanism to allocate this finance (also called smart subsidies). Private sector entities who may be interested in supplying broadband Internet service to unserved communities will be invited to submit bids in response to a request for proposal (RFP). The party asking for the least subsidy – either because it has the most efficient technology and business plan or because it is investing more of its own capital – will be declared the winner.

The UASF could fund the following items:

- Broadband infrastructure, both backbone and access network and the subsequent service provision;
- Broadband connections for elementary and high schools in collaboration with DepED;
- Broadband connections for prioritized rural hospitals and health centers in collaboration with the DoH;
- Broadband connections for existing and newly created CeCs, including a limited time of operational support if required until the CeCs are expected to become financially self-sustaining;
- COMELEC precincts to stabilize poll automation; and/or
- ICT awareness and training campaigns.

2. Institutionalize sustainability of publicly shared Internet access and scale it up

Our country is still characterized by relatively low personal computer (PC) penetration. Low PC penetration and Internet usage, especially in the rural areas, partly reflect the financial inability of citizens to have their own computers and pay the monthly cost of Internet connectivity. In addition, there is relatively low awareness of potential benefits and low skill levels in using computers, the Internet and various online services and applications.

The use of shared public Internet facilities have been shown to help with these issues as follows:

- they allow affordable Internet use, as users just pay for the time they use the Internet rather than monthly bill;
- they can be a center of computer and Internet training and capacity building;
- they can be used to raise awareness about benefits of Internet usage and online services as well as responsible, environmentally friendly computer use; and
- they can be used to improve inclusive Internet growth by catering to specific disadvantaged groups such as persons with disabilities, among others.

Since 2006, the Philippine Community eCenter Network or PhilCeCNet has been a multi-sectoral partner of the CICT for the implementation of the Philippine CeC Program (a recipient of the FutureGov Awards 2010 for Digital Inclusion). PhilCeCNet is registered with the Securities and Exchange Commission as a non-stock, non-profit organization. 1,200 communities have been connected to the Internet through the CeC program. Identified challenges to the CeC Program are: (a) ensuring the sustainability of the CeCs, and (b) replicating

and scaling best practices to a point that attracts more partners, both public and private, and allows the deployment of CeCs to municipalities and barangays without a publicly shared Internet access point.

This key action will build on the past initiative and leverage accomplishments and experience, as well as by learning from mistakes.

In particular, the following are considered important elements of implementation:

Capacity Building for CeC Workers on Business and Entrepreneurship

The sustainability and continued viability of existing CeCs depend on the abilities of their operators to profitably run them, as well as on the community's own demand and support for the services that the CeC will provide. Capacity building programs and training to build business and entrepreneurial skills will be provided for CeC workers, particularly in unserved areas where such competencies are most needed.

These would include trainers' training on computer and Internet use that CeC workers can deliver to community residents as a means of both introducing new skills and of generating market demand for CeC services; business development training; and other capacity building activities to ensure that these facilities are operated in a sound and sustainable manner.

Creating single market opportunity through CeC network

Efforts to promote investments in rural communities are hampered by the small size of such areas. Small and remote communities, even if equipped with a CeC, remain small and remote. The private sector is generally hesitant or uninterested in entering unprofitable markets such as these.

One solution would be to make rural communities more attractive to the private sector by aggregating them into a single, much larger and more compelling market opportunity. By networking CeCs – particularly those in rural communities – it becomes possible to create a much bigger virtual community, representing hundreds, if not thousands of rural villages, which can then be leveraged to identify applications and services that can attract private investment and ensure sustainability.

In this manner, government and private sector players, either by themselves or through public-private partnerships, will be able to efficiently tap into the rural market and provide their services, not by tediously working community by community, but, enabled by ICT, through a much larger community of communities. Opportunities include, among others, investment in e-Governance, health, tourism, telecommunications and farming, and all can be explored in full partnership with the private sector.

Establishing CeCs in every Barangay

The objective is to have a CeC in every barangay. There are three possible ways how additional CeCs can be created in areas that have no CeC to date:

- If a private Internet café already exists in a barangay, it can apply to be accredited as a CeC (similar to private contracting scheme between public and private schools). This would involve meeting certain minimum quality criteria and additional requirements to be recognized as an "official" CeC. If it is located in an unviable area, it may qualify for some funding to upgrade or operate its services.
- Leverage infrastructure and other assets found in existing e-Eskwela and other e-center programs of NGAs and NGOs to double as CeCs for their improved sustainability – following a similar accreditation process as described above.
- Through the UASF, funding can be provided to a) local entrepreneurs to establish CeCs in as of yet unserved barangays or b) to local companies that could provide several CeCs – a network of CeCs

– for example for all unserved barangays in an entire region or even nationwide to take advantage of economies of scale.

3. Provide all remaining public high schools and elementary schools with broadband Internet services

The Department of Education (DepED) is operating 37,807 elementary schools and 6,488 high schools nationwide. It is responsible for providing free elementary and secondary education to all Filipinos. Some progress has been made equipping high schools with Internet access and computer laboratories. The i-Schools Project of CICT has equipped 1,000 out of 6,650 public high schools with a wireless Internet laboratory (i-Schools Wireless Internet Learning Laboratory or iWILL) that has 20 Internet-ready computers, an LCD projector and printer. School heads and teachers were also trained on ICT integration in teaching and learning to facilitate the use of these facilities. The i-Schools Project was the recipient of the Digital Inclusion Award at the FutureGov Government Awards in 2009.

Gearing up Internet Literacy and Access for Students (GILAS), a private sector initiative, has also equipped around 3,400 public high schools with 10 computers per school and Internet access. Around 2 million students gained access to the Internet via this initiative. Unfortunately, after only one year, 7% of recipient schools have discontinued their Internet access.

The Department of Education (DepED) has issued an order (DepED ORDER No. 50, 19 May 2009) called "Launching the DepED Internet Connectivity Project" (DICP) and directed all public secondary schools to subscribe to Internet connectivity services. The DICP aimed to connect all public secondary schools to the Internet by School Year 2009-2010. DepED provides an annual budget for the service costs of PHP 48,000 for every school and any related expense to be charged against the maintenance and other operating expenses (MOOE) fund for the DICP.

However, many public high schools and the majority of elementary schools still have no broadband Internet service. Also, as the typical size of a computer lab is between 10 to 15 computers, schools have low computer-to-student ratios.

Attempts to mobilize additional funding for Internet connectivity within schools are challenged as ICT laboratories and personal computers compete for already scarce funds that are available under school budgets. However, more investments in Internet connectivity and computers must be a priority. Insufficient access to computers is one of the main obstacles in ICT for education programs. This is particularly relevant for educational institutions located in rural areas where the school or training institution is the only access point for computers. Although this will require considerable investments in infrastructure, it is nevertheless essential in order to guarantee equal access and to narrow the digital divide.

DepED's share in the national budget has not increased in the last 13 years (1995-2008). It remained constant at 13 percent, with an average of 0.3 percent decline in the per-student budget. Thus, a substantial budget increase is necessary to support further ICT integration in schools in order to prepare young children for the digital economy and knowledge society. Also, additional funding sources shall be elaborated, including alternative sources such as the proposed UASF and ODA.

Regional or provincial help desk and support centers for schools

A major challenge is the sustainability of usable equipment and connectivity within schools. Regional or provincial help desk and service centers throughout the country shall be established to provide maintenance and support, and more specialised services such as system integration, project management and change

management as required. The Help Desks can also promote responsible and green ICT practices to help reduce energy consumption in schools and improve awareness for better handling and disposal of IT waste. This program may be outsourced as needed.

4. Implement security measures (infrastructure, data and cybercrime) and privacy protection

As private and government transactions increasingly rely on and are driven by ICT, the continued reliability and robustness of the infrastructure to withstand threats and damages that may be caused by natural calamities, terrorism, crimes and other unanticipated events (whether natural or man-made) is critical to engendering the trust and confidence of investors, stakeholders and the general public.

It is said that cyberspace is the nervous system of this national infrastructure – the control system of a country. It is for this reason that securing vital infrastructure and data is important. Also, cybercrimes can be serious in terms of the scope and depth of damage that they may cause. Cybercrimes are wide-ranging in nature, are constantly evolving, and may target physical infrastructure or digital applications and content. Given that exploiting security flaws is now easier, less expensive and more anonymous than ever before, cybercrime is a serious threat that is not likely to dissipate.

Securing cyberspace is an extraordinarily difficult challenge that requires a coordinated and focused effort, with an emphasis on prevention and damage limitation. As with other crimes, most security plans concentrate on minimizing the frequency and duration of disruptions caused by cybercrime and minimizing the extent of the damage.

It is critical that modern laws and policies that are in place are appropriate and effective at dealing with the many potential consequences of cybercrimes. Typical areas of focus include: governance and security, international cooperation, emergency preparedness, information security exchange, human resources security, physical and environmental security, access information systems controls, incident handling and compliance. Specific considerations can be made for women and children in terms of cyber security since these are two vulnerable sectors for cyber crimes.

Online Consumer Protection

Without an adequate baseline of consumer protection, there will remain a reluctance by some users to comprehensively engage in electronic communications. The adequacy of the protection can partially be gauged by how many users refuse to participate and consequently miss out on the long list of advantages the online environment has to offer. Another measure of online consumer protection is the ease and extent to which users have recourse when something goes wrong.

Online consumer protection includes data security and privacy provisions, methods to reduce cybercrimes, and enforcement of intellectual property rights. This protection can be developed through a combination of expanded digital literacy, industry self-regulation and laws, policy and enforcement administered by governments or through private-public partnerships.

Proactive measures such as education, training, policing, and the use of advanced technologies are enhanced when there is a system in place that quickly and fairly prosecutes law breakers. Protective measures are targeted and strengthened in order to help guard against criminal activity affecting more vulnerable groups – such as children, women, elderly and other, technologically marginalized groups.

INTERNET OPPORTUNITIES FOR ALL PEOPLE

The general public will be made aware of the nature of cybercrimes and sustained efforts will be undertaken to improve their knowledge of such activities and the proper way of using the Internet and online resources to avoid being victims of cyber criminals, causing damage to others online or unwittingly being used in undesirable online undertakings.

Data Security and Privacy

Similarly, the ability to assure protection of personal or confidential information online is a critical feature of any digital society and vibrant BPO sector, such as that found here in the Philippines, where data privacy and security is a non-negotiable necessity. In order for digital communications to flourish, and to become a common and accepted means of conducting business, interacting with government, carrying out financial transactions, interacting socially, or participating in a host of other connected activities, it is essential that a minimum standard of user confidence exists.

The key concern is lost control and unauthorized use of private and confidential information. Gathering and distributing information without the explicit consent of the user, legal or illegal, can be widespread and potentially damaging to user confidence. The very nature of "online" data – malleable, storable, easily and quickly transferable – coupled with those of the "online" criminal – borderless, anonymous – lends themselves to creating potentially widespread and serious problems for an evolving digital society.

Encouraging best practice in data management and privacy, ensuring that legal provisions are clear and are met, and defending against abuse are the core objectives of a data protection framework. Within this framework, there shall be practical safeguards set for the handlers of information, a clear set of rules to follow and punishment to dissuade illegal practices. It shall also include a program to improve user literacy by teaching risks and solutions, and encouraging safe electronic communications practice. Finally, there may also be an allowance for proactive policing and prosecution of abusers.

5. Modernize ICT policies, laws and institutions

While ICT infrastructure and service provision is and will be mostly private sector-led and government must continue to cultivate an enabling regulatory environment, it also has an important role to protect consumers and ensure effective competition and a level playing field for all ICT players.
Consistency, transparency and the predictability of rules encourage investments which are critical to sustaining the efforts of the country to deploy and promote ICTs to spur economic growth.

Thus, it is important that legislative and executive action is modernized to support ICT development. Among many required legislative, regulatory and policy reform initiatives, the following are described in more detail.

NTC Strengthening

Competition is the basis for the rapid penetration of ICT services, such as cell phones, into our society. Fair competition is only possible if there is an institutional, non-aligned arbiter whose role it is to license, monitor and enforce obligations and conditions on each player in the market. If a regulator does not have sufficient capacity to fulfill its role, it runs the risk of regulatory capture by dominant operators and the subsequent decline in competition, to the detriment of the Filipino consumers.

There are several ways to strengthen the National Telecommunications Commission. These include:

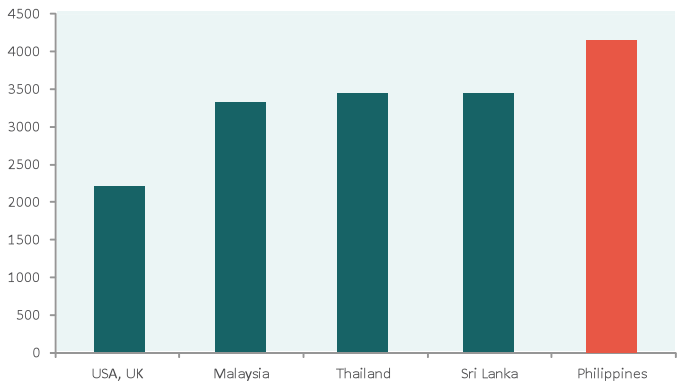
- Setting up staggered fixed terms for commissioners in order to ensure independence;
- Fiscal independence from government (funding of the regulator might be allocated as a percentage of license fees from the sector); and
- Capacity building of professional staff.

A well-capacitated, independent regulator is necessary to implement the policies of the government, ensure fair competition and allocate resources, such as spectrum, efficiently and fairly.

Competition Policy for the ICT Sector

Communication network development, access, affordability and use are strongly driven by competition between operators. The combination of the legacy of natural monopolies, consolidation amongst operators as well as scarce spectrum has provided some operators with an unfair advantage. The aim of a competition policy is to intervene in markets where there has been market failure; that is, in sectors of the industry that do not exhibit fair competition. Mobile markets and markets for the provision of Internet services have been particularly liable to anti-competitive behaviour. An example is the lack of a shared national ISP exchange for

Figure 4.4 Market Competitiveness Index
Herfindahl Hirschman Index



small and big ISPs alike.

Using the Herfindahl-Hirschman Index (HHI) as a measure of market concentration, the Philippines mobile sector scores 4,144, indicating a highly concentrated sector. In comparison, two of the world's most competitive mobile markets, the USA and the UK, each score around 2,200. Malaysia, Thailand and Sri Lanka also have more competitive markets. These figures underscore the important of a competition policy for the ICT sector and its effective enforcement.

Convergence Bill

The ability to access 'any content, any time, any place, anywhere' has been made possible through the convergence of the telecommunications, IT and broadcasting sectors. Historically, each of these sectors was perceived as separate, though interacting, from both a technical and policy point of view (see Figures 4.5 & 4.6). Technical convergence has meant that the lines between these sectors has blurred. Convergence brings great advantages: increased choice, innovation, convenience and lower prices driven by increased competition. However, the consequence is that these sectors cannot be addressed through separate legislation, policies and regulation.

Figure 4.5: Pre-convergence

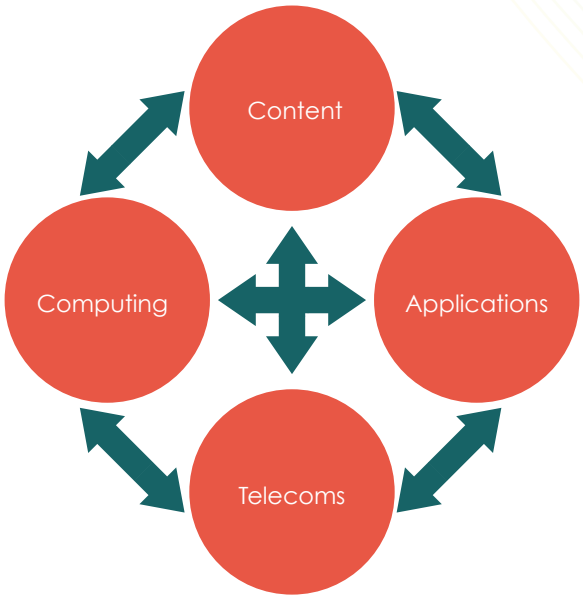
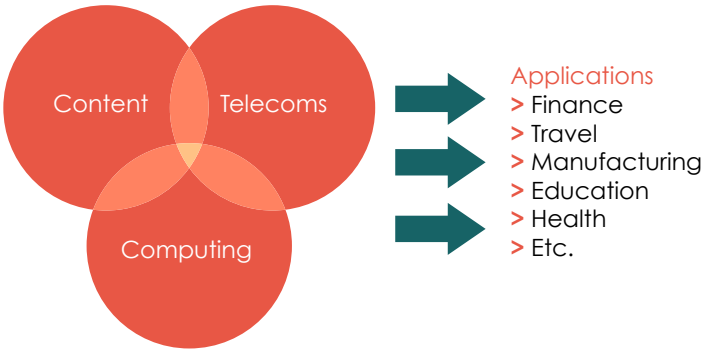


Figure 4.6: Post-convergence



INTERNET OPPORTUNITIES FOR ALL PEOPLE

The opportunities offered by convergence are to overcome and reduce duplication within these historically distinct sectors, introduce less regulated class licenses and exemptions, and streamline regulatory functions.

The primary law governing the ICT sector is RA 7925, otherwise known as the Public Telecommunications Policy Act of 1995. While this law is rightly credited with fostering competition and accelerating investments into the sector, it also ushered in new technologies (such as VoIP and the Internet itself) and business models that were not anticipated at the time it was passed. Like other pre-Internet laws that remain in place, it now restricts the NTC as it struggles to apply an increasingly obsolete law to provide appropriate responses to the changing needs of the sector and the demand of the public for competitively priced and wider selections of ICT goods and services. Its replacement, in the form of a new convergence law, is urgently required.

Spectrum Management

The increasing ubiquity of wireless devices and the ability to access 'any content, any time, any place, anywhere' means that the efficient management of spectrum is critical. Wireless technologies are closing the divide that exists between emerging and developed countries. Spectrum is a scarce resource that needs to be managed effectively and efficiently in order to derive maximum economic and social benefit.

There are three basic steps to efficient spectrum management:

- the allocation of specific categories of frequency;
- the assignment of frequencies to users; and
- the equitable distribution of frequency to users.

Most systems of spectrum management include the first two stages, but do not include the equitable distribution of frequency. In other words, spectrum management needs to take into account both the private sector as well as public interest. The public interest can be served, for example, when frequency is set aside for community broadcasters and NGOs. If there is an equitable distribution of spectrum, it ensures that a select few operators do not dominate the market. At the moment, frequency allocation in the Philippines is not seen as transparent, fair or competitive. Greater competition in the market would support greater innovation and faster penetration of new wireless devices and applications.

Broadcasting and digital switchover

Prior to satellite TV, most broadcasting was via analog signal. Digital technology, on the other hand, is able to transmit the same number of channels using only one-third to one-sixth of the bandwidth of an analog channel. This means that a substantial portion of scarce spectrum can be allocated to other applications, such as mobile broadcasting or mobile broadband. The freeing up of spectrum by moving from analog to digital is referred to as the 'digital dividend.'

A portion of the digital dividend could be allocated to increased broadcasting demands, such as transmitting more channels or introducing High Definition Television (HDTV) services. Even so, this means that more spectrum will be available for other services. The ITU has provided a deadline of 2015 for the switchover from analog to digital. After 2015, there will be no protection for analog signals.

While the benefits of the move from analog to digital are clear, there are several preliminary stages to a successful switchover. These include:

> Which services are going to be transitioned? I.e., is there an implementation plan?

> What is the technical standard that is going to be adopted?

> What legislation is required?

> Has a social and economic evaluation been done? (e.g., what are the costs to the consumer? Will new TV sets be required? Will the state subsidise set top boxes that can decode the digital signal?)

Here in the Philippines, the deadline for the switchover to digital is December 31, 2015. However, the NTC has yet to decide on a single digital TV standard and this lack of certainly may impact on the overall time period of the transition.

Review of Postal Service Policies

The postal market in Philippines is completely liberalized. It is highly competitive with 209 private operators licensed to provide postal services. The size of the postal market in the Philippines is estimated to be around 1.2 billion items[vii]. Philippine Postal Corporation's (PHILPOST) share is about 20%, and the market share of the three largest private operators (FedEx, DHL Express and Air Freight) is about 77%.

International studies have shown that a good quality postal service acts as a driver (not a result) of economic development. It is an indispensable means of communication and transport of light goods for commercial and social purposes. Globalization and technological advancement is changing the way postal market is revolving to the point that the postal industry is believed to become a "sunset" industry. However, existing policy on postal services is provided for under Republic Act No. 7354 which was issued in 1992, during the period when commercialization of the Internet is just in its early stage.

It cannot be disregarded however that postal service is a significant part of the information infrastructure of our country. It provides physical communication links to every part of the country and is a necessity for social intercourse, education, international trade, domestic trade and commerce. It has the most extensive network of retail outlets in the country and it has the potential of providing "value-added" physical, electronic and financial services, especially in rural areas. Moving towards a knowledge economy, it is vital for government to set development policy for the postal industry, establishing the legal framework, setting ground rules for the postal market and how postal regulatory functions are to be discharged and identifying sources of investment funding.

Creation of a Department on ICT

The creation of a new Department for Information and Communications Technology will underscore, as no other initiative can, the role of the ICT sector as a critical engine of growth for the Philippine economy. It will also recognize the growing and increasingly indispensable role of ICT as a tool for transparency and efficiency in the delivery of key government services. The Department of ICT will integrate and coordinate all ICT efforts in government, and will play the leading role in making public services more accessible to the people. It will also create a council of Chief Information Officers who will coordinate the implementation of e-government projects in the country, as well as participate in ICT policy making for government. The DICT will provide and encourage more focused public-private strategy on ICT.

Internet Governance Policy

The increasing use of the Internet makes it imperative for our country to develop a policy on Internet governance that is based on international norms and standards. It is recognized that Internet is an engine of development, such that any policy on Internet governance should be open for development and innovation, and considers protection of privacy and human rights.

4.5 INSTITUTIONAL IMPLEMENTATION ARRANGEMENTS & FUNDING

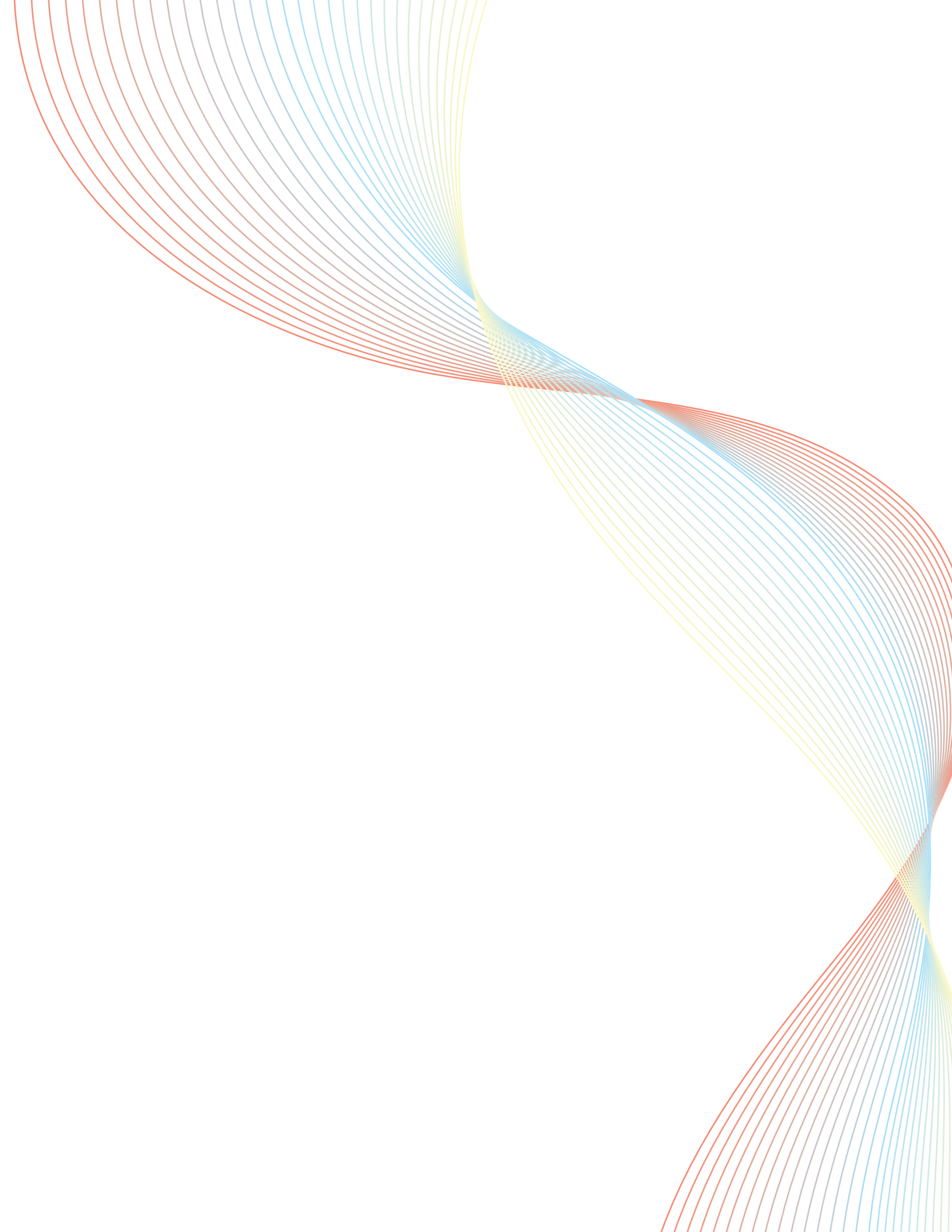
Table 4.3 – Institutional implementation arrangements and funding: Internet opportunities for all people

ACTION	LEAD AGENCY & KEY PARTNERS	FUNDING APPROACHES
Craft and implement a national broadband policy	> CICT > INDUSTRY, NTC	> PPPs > Incentives, tax breaks > UASF/spectrum fees
Institutionalize sustainability of publicly shared Internet access and scale it up	> CICT & PhilCECNet	> PPPs > UASF/spectrum fees
Provide all remaining public high schools and elementary schools with broadband Internet services	> DEPED > CHED, TESDA, PRIVATE SECTOR	> Existing budget > Cost savings through economies of scale
Objectives that are supported through the achievements of the targets		
Implement security measures (infrastructure, data and cybercrime) and privacy protection	> CICT > CIO Council, industry, DOST > PNP	> Government funding > Private sector
Modernize ICT policies, laws and institutions	> CICT > NTC and lawmakers > Industry	> Government funding > ODA

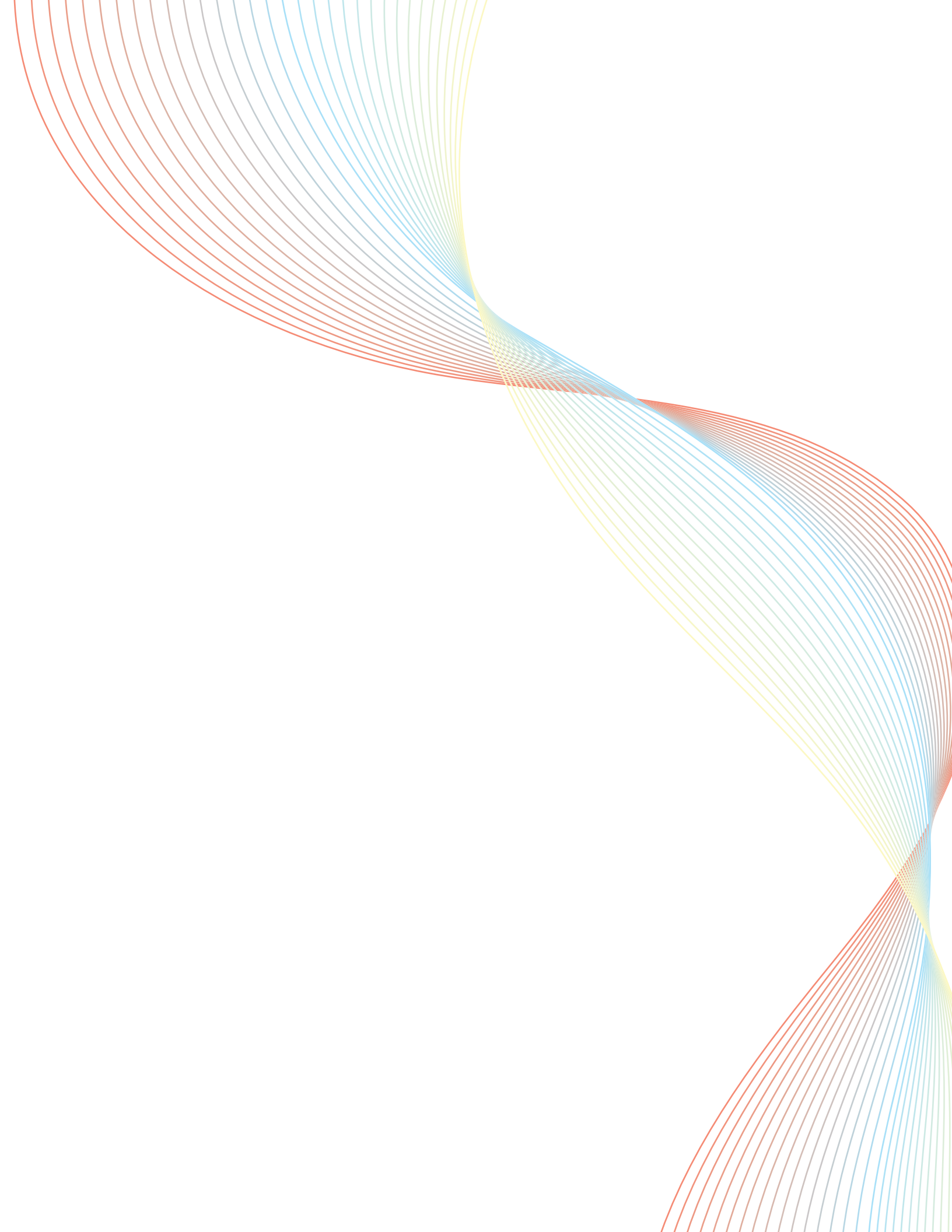
4.6 MILESTONES: MEASURING PROGRESS

Table 4.4 – Milestones for key actions: Internet opportunities for all people

ACTION	KEY MILESTONES	2011	2012	2013	2014	2015	2016
Craft and implement a national broadband policy	Craft policy	●					
	Implement policy		●				
Institutionalize sustainability of publicly shared Internet access and scale it up	40% brgys with Internet access center			●			
Provide all remaining public high schools and elementary schools with broadband Internet services	80% high schools Internet			●			
	40% primary schools Internet				●		
Implement security measures (infrastructure, data and cybercrime) and privacy protection	Cybercrime law		●				
	Online consumer protection			●			
Modernize ICT policies, laws and institutions	NTC Strengthening		●				
	New ICT Law			●			



5. INVESTING IN PEOPLE DIGITAL LITERACY FOR ALL



INVESTING IN PEOPLE: DIGITAL LITERACY FOR ALL

5.1 WHY DIGITAL LITERACY IS IMPORTANT

With a population of 93.6 million[viii] and an abundant labor force of 37.89 million[ix] , human capital is an indispensable contributor to the growth of our country's economy. Equipped with the necessary knowledge and skills needed in ICT, we will not only become globally competitive with an ICT-enabled workforce, but also engender a citizenry confident and competent in the use of ICT.

In order for us to realise our full potential in ICT, our government will promote digital literacy in the country, and encourage citizens to become confident and skilled in the use of digital media. This requires continuing investments for ICT in formal and alternative education as well as in skills training. As technology advances and becomes more complex, this will enable people to fully participate in situations requiring a technology-literate population.

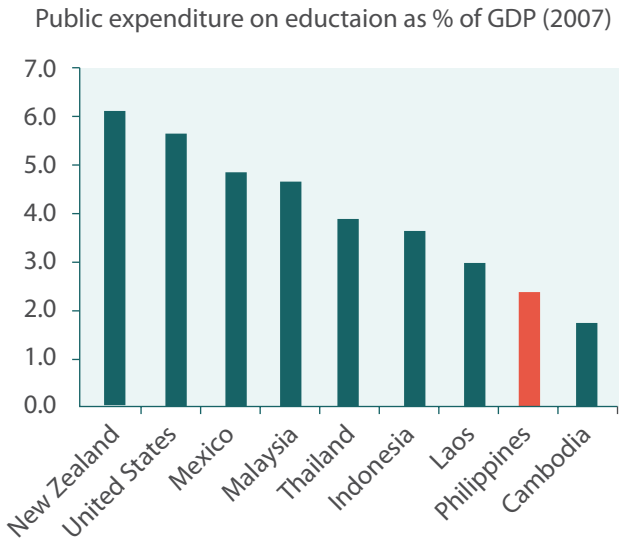
Globalization and the rate of acceleration in ICT also require flexible workers who are ready to learn and are prepared to have several career changes in their lifetime. Failure of an education system to develop these qualities in their graduates can contribute to their ineffectiveness in the workforce. As a result, creating opportunities for life-long learning has become a major requirement of this new job market, and is a generally accepted feature of any healthy knowledge economy. Our workforce will be able to maintain its competitive advantage in the global labor market if it can keep up with the rapid changes in technology and the knowledge economy. With this propensity for continued learning coupled with our other comparative advantages, such as English language proficiency, adaptability, educated and a deep-seated value system that prizes serving others, commitment and loyalty, cultural adaptability and familiarity with Western business culture, plus a large pool of accounting and business graduates, Filipinos are poised to becoming members of the next generation of highly-valued and fully effective 21st century[x] workers and citizens.

Our country, however, faces a number of challenges that will limit the degree to which digital literacy is pervasive throughout its population. These challenges are real and ones to which the Philippine Digital Strategy aims to address and resolve.

While we continue to be competitive against other countries in the region, one of our main weaknesses is our relatively small pool of IT skills. These skills provide one of the main foundations for ICT sector growth in the upcoming years. In comparison to other countries such as Thailand, Indonesia and Malaysia, we

spend 2.7% of GDP on education, a proportionately smaller amount of money than other countries in the region. In comparison, Thailand spends 3.8% of its GDP on education, Malaysia spends 4.5% and Indonesia spends 3.5% (Figure 5.1).

Figure 5.1 – Country comparison of public spending on education



The strategic thrust of "Investing in People: Digital Literacy for All" is based on the premise that it will be every citizen's right, men and women, to have equal access to quality education, training and skills development opportunities through formal and/or alternative means. The key actions presented in this section highlight the areas that the government, in cooperation and collaboration with strategic partners, will develop and implement over the next few years. These actions cover strategic plans and policies to harness our ICT skills towards improving and sustaining the country's national competitiveness. It calls for an educational system that capitalizes on the use of ICT in learning, the development of a world class knowledge worker and the promotion of a culture of creative ICT use. With highly educated, well-trained and technology updated human resources, our country will fully benefit as it evolves into a truly ICT-enabled society.

5.2 MAIN OBJECTIVES

The main objectives of this "Investing in People: Digital Literacy for All" strategic thrust of the PDS are the following:

- Raise digital literacy in the country to enable a culture of competent, confident, responsible, and participatory use of ICT;
- Improve access to and increase participation in the development of relevant and appropriate local content
- Expand the role and importance of ICT in improving the quality and delivery of education and lifelong learning [This is related to the "provision of affordable access to ICT" which is further discussed under the strategic thrust of "Internet for All"];
- Produce more globally competent workforce, possessing 21st century skills, through the use of ICT;
- Improve the capacity of government workforce to effectively develop and manage government ICT

infrastructure and systems [This is further discussed under the strategic thrust "Transparent Government and Efficient Delivery of Services']; and

- Strengthen initiatives on the use of ICT to develop and promote the culture, arts, history, public health, and other socio-civic concerns of the country.

These objectives collectively seek to address the human capital requirements of every Filipino, from an ICT perspective, regardless of ability, social standing, geographic location, or gender. These objectives all converge around the overarching aim for the government to use ICT in education and training as a mechanism to provide equitable access to opportunities to both empower and improve the lives of every Filipino.

5.3 MEASURABLE TARGETS

The strategic thrust "Investing in People: Digital Literacy for All" of the PDS has the following specific measurable targets:

1. Develop national standards and indicators on digital literacy

- Build a national database on digital literacy and related information, and adopt a national indicator on digital literacy (i.e. digital literacy rate); and
- Increase basic ICT literacy levels, as measured by internationally accepted standards, by 10% of the baseline annually up to 2016.

2. Improve the delivery and quality of education using ICT

- Formulate and implement a National ICT for Education framework by 2016;
- Adopt national ICT competency standards (NICS) for administrators, teachers, and learners based on international standards, e.g., UNESCO Competency Standards for Teachers, International Society for Technology in Education-National Educational Technology Standards (ISTE-NETS);
- Adopt teaching strategies and approaches that are learner-centered and technology supported to enable learners to acquire and apply 21st Century skills
  - Increased application of ICT-supported teaching strategies and learning resources to a rate at least 50% higher than current baseline levels by 2016
  - Increased number of available ICT-based learning content to a rate at least 50% higher than current baseline levels by 2016
  - Increased number of graduates with 21st century skills, by 10% annually above current baseline levels up to 2016;
- Adopt a national assessment for digital literacy and use this to assess current situation and enable more precision for targeted growth; and
- Create the ICT in Education Fund for the conduct of more trainings and ICT4E initiatives.

3. Improve employability[xi] of workforce in ICT and ICT-enabled sectors

- Increase the level of absorption rate of graduates by this specific industry, by 10% of the baseline annually up to 2016;
- Adopt a national competency standard for the various job roles;

- Increase the number of ICT skilled individuals as measured by NICS or any national and international certification programs, by 10% of the baseline yearly up to 2016; and
- Expand number of sector-customized training programs developed (i.e., women, minorities, indigenous peoples, persons with disabilities and overseas foreign workers) to a level 50% above current baselines by 2016.
  Note: For those in government – targets are discussed in strategic thrust "Transparent Government Efficient Delivery of Service"

4. Enhance ICT entrepreneurship

- Increase number of micro, small & medium-sized enterprises (mSMEs) trained in the effective and efficient use of ICT to enhance their businesses;
- Increase number of technopreneurs; and
- More new ICT businesses developed.

5. Increase appreciation and responsive use of ICT by citizenry

- Increase awareness and use of ICT, ICT use, and ICT-supported services among the citizenry by 15% of baseline data annually up to 2016;
- Increase number of developed ICT-based learning resources or content developed, by 10% of baseline data, to promote the culture, arts, history and socio-civic concerns of the country; and
- Expand the number of industry and sector-customized training programs developed (i.e., agriculture, health, office workers, women, minorities, indigenous peoples, persons with disabilities and overseas foreign workers) to a level 50% above current baselines by 2016.

INVESTING IN PEOPLE: DIGITAL LITERACY FOR ALL

The specific targets are summarized in the Table 5.1 below:

Table 5.1 – Targets: Investing in People by 2016

Develop national standards and indicators on digital literacy	Improve the delivery and quality of education using ICT	Improve employability of workforce in ICT and ICT-enabled industries	Enhance ICT entrepreneurship	Increased appreciation and responsive use of ICT by citizenry
National sex-aggregated database on digital literacy and related information[xii] National indicator on digital literacy Basic ICT literacy levels increased by 10% of the baseline annually up to 2016	National ICT for Education Framework National Competency Standards for teachers, administrators,and learners Innovative teaching strategies and approaches adopted ICT based teaching or learning objects at least 50% more of current baseline Number of graduates increased by 10% above current baseline National assessment for digital literacy Education Fund created	Increased absorption rate of graduates by 10% annually of the baseline Adopted national competency standard Increased the number of ICT skilled individuals by 10% annually Expanded number of sector-customized training programs to 50% above current baselines by 2016	Increased number of MSMEs trained in the use of ICT to enhance their businesses Increased number of technopreneurs, by 10% annually of current baseline More new businesses developed	Increase awareness and ICT use and ICT-supported services among the citizenry by 15% of baseline data annually up to 2016 Increased number of ICT learning resources developed, by 10% of the baseline, to promote the culture, arts, history and socio-civic concerns of the country Expanded number of sector-customized training programs to 50% above current baselines by 2016
Objectives that are supported through the achievements of the targets				
Digital Literacy Globally competent workforce Empowered Filipinos	Digital Literacy Empowered Filipinos	Globally competent workforce Digital Literacy	Globally competent workforce Digital Literacy	Empowered Filipinos Confident use of ICT Promotion of nationalism Digital Literacy

5.4 KEY ACTIONS

The key actions focus on three areas: education, training and life-long learning to accelerate the development of knowledge based human capital. The first three action plans aim to address concerns on policies, standards, and institutional and governance structures, which affects all sectors. The succeeding four actions plans pertains to sector specific concerns i.e. trainers/educators/teachers, ICT industry workforce, technology entrepreneurs, and special sectors.

Table 5.2: Description of Key Actions: Investing in People

ACTION	DESCRIPTION
Actions that cuts across all sectors to address policy, standards, and institutional concerns	
1. Strengthen reforms in the educational system to produce digitally literate (21st Century skilled) graduates	> Formulate a coherent national policy framework for ICT4E, in which: □ ICT is integrated in the curriculum across all levels of the educational system □ Instructional materials and delivery platform is ICT-based and updated as needed □ There is an assessment of digital literacy and 21st Century skills used □ Awareness of gender, environment, special needs, and related concerns are considered > Adopt appropriate competency standards for teachers, education managers, school administrators, and trainers based on international standards > Adopt a competency standard for learners/students at all levels > Create and maintain a Philippine Education Portal (for access to shared information on education and learning in general) > Promote the principles of lifelong learning to help learners adjust with the rapidly expanding knowledge and changing technology in the digital era > Establish a specially designed ICT School (similar to Philippine Science High School but up to college level)

INVESTING IN PEOPLE: DIGITAL LITERACY FOR ALL

ACTION	DESCRIPTION
2. Strengthen existing or develop new governance structures, multi-stakeholder collaboration and public-private partnerships on education to reduce digital divide	> Promote public-private partnership in the provision of education and professional training > Expand scope of Education Councils and Committees to include ICT > Involve the community and LGU in ensuring a safe and responsive ICT learning environment > Institutionalize and leverage multi-stakeholder collaborations and partnerships with local, regional and international groups > Strengthen collaboration with other countries and international organizations relevant to ICT and education/training > Establish Regional ICT Centers[xiii] > Central and regional digital libraries and resource centers
3. Develop a national database on education related information and a system of assessing Digital Literacy (on national level)	> Conduct of baseline survey/study on Digital Literacy, utilization and productivity and participation levels > Formulate a model to define a national digital literacy rate and establish indicators > Establish a gender sensitive national database on ICT graduates, skills and related information > Adopt a national standard performance and productivity measures for ICT education, training and graduates > Conduct a gender sensitive impact assessment of ICT trainings conducted, based on standards
Actions that addresses the concerns of specific sectors	
4. Implement an incentive-based professional development program for teachers, educators and trainers	> Adopt student-teacher-industry experts exchange/ immersion program > Strengthen and standardize teacher training on and application of ICT integration in education including perspectives on gender and environmental considerations of ICT > Establish ICT4E communities of practice (COP) and centers of excellence (COE) > Promote academic linkages/multi-sector educational alliances, e.g., eQuality Program > Adopt an incentive system and certification program

INVESTING IN PEOPLE: DIGITAL LITERACY FOR ALL

ACTION	DESCRIPTION

5. Address the shortfall of skilled workforce for the ICT and ICT-enabled Industries	> Identify gaps to industry requirements
	> Assess ICT competency levels of graduates / available workforce and continue the of conduct necessary and appropriate interventions to bridge the gaps
	> Implement Skills Development Programs such as:
	  > Philippine Creative Digital Content Development Program[xiv]
	  > Quality Assurance Program for training institutions
	  > National ICT Competency Program/Professional Certification Program
	  > Expertise Building Program for high-end niche skills
	  > Funding Program for near hires
	> Promote Government-Industry-Academe linkages
	> Address specific concerns of ICT sectors to retain skilled personnel in their industries

6. Develop the skills of technopreneurs to be globally competitive	> Establish a mSMITE (micro, small, medium IT entrepreneurs) Program that would include:
	  > ICT technopreneur incubation/innovation fund and awards
	  > ICT technopreneur fair
	  > ICT technopreneurs skills development program
	  > (Joint) Government-Industry-Academe (GIA) linkages program through the local ICT Councils

7. Address ICT literacy and competency needs of special sectors (youth, women, PWDs, indigenous people, among others)	> Philippine Creative Digital Content Development Program –marketable original content (intellectual property) will be developed; original content that promotes local culture, arts, history and values can be marketed to the global creative industries as a unique Filipino product, helping stimulate the local creative economies. > Implement gender sensitive Skills Development Programs for special sectors > Advocate/campaign effective and responsible use of ICT including more green ICT practices > Study policies that can promote ICT adoption and use among special sectors > Establish local digital libraries and online libraries, and resource centers > Promote and communicate local digital content to key stakeholders and consumers

INVESTING IN PEOPLE: DIGITAL LITERACY FOR ALL

1. Initiate reforms in the educational system to produce digitally literate graduates

A coherent national policy on ICT in education is an essential cornerstone of a knowledge society. A policy framework will consider these key elements: educational objectives, project management, infrastructure readiness and platform development, content availability, training and usage support, educational management, maintenance and technical support, and comprehensive monitoring and evaluation. The development of a national policy for ICT for Education will be inclusive in its design, with government creating an interdisciplinary task force that includes private sector and civil society partners.

A particular focus for academic reform is to include ICT in school curricula across all levels of the education system. It will be most effective if ICT education is introduced at the very basic levels of education. Integrating ICT in elementary education will reap the biggest rewards as children that young more easily adopt new technologies and new ways of learning. This action includes the development/adaptation of ICT-enabled content for education and training that is appropriate, relevant and localized to the needs of the respective educational communities. Also, with rapidly changing technology, information is expanding exponentially and each individual has to adapt to these changes so it is important that lifelong-learning is vigorously promoted. The value of having lifelong learning would have to be encouraged early on, when children enter the education system. This is also the opportunity to develop an early appreciation for green ICT among students which can form part of their foundation of ICT knowledge and practice. Adopting environmentally friendly ICT attitudes and habits early can considerably help reduce the contribution of the sector to total carbon emissions and pollution caused by improperly disposed IT products.

In addition to the development of a National Policy on ICT in Education, competency standards will be formulated and adopted to measure the ability of teachers, education managers, school administrators, and trainers; and to measure the level of understanding of students. This is to ensure the quality in the delivery of education by regular assessment of performance and making adjustments in ongoing programs accordingly.

Governments must demonstrate political will in pursuing the needed reforms and must champion the integration of ICTs to improve education and training in line with national development goals and frameworks. The reform program must be sustained throughout the duration of the Philippine Digital Strategy.

2. Strengthen existing or develop new governance structures, multi-stakeholder collaboration and public-private partnerships on education to reduce digital divide

Collaboration among government agencies (both local and national), private sector, and academe will be strengthened to avoid duplication of efforts in increasing digital literacy. Involvement of the communities and local organizations (e.g., Education Council) will likewise be maximized to ensure safe and responsive ICT learning environment.

Government will encourage more public-private partnership in the area of ICT for Education. With PPP, government and private sector join forces in ensuring an efficient and effective delivery of education and training services, and develop the capacity of the workforce to be globally competitive. PPP can play a vital role in financing research and development on education, and in developing innovative and complex learning applications and locally relevant content.
Partnerships with local, regional and international groups can provide support to implementation of ICT-related education policies, including conduct of training programs, development of an online education

portal, establishment of Regional ICT Centers, and creation of digital libraries and resource centers. Linkages and networks also help accelerate information flow and allow local stakeholders and government to keep abreast of international and regional developments.

Collaboration among countries, including regional networks of ASEAN, where language and cultural context are similar, can serve as a platform to promote educational quality and equality in an effort to bridge the digital divide. Greater exchange and collaboration in the production and management of educational resources will lower expenses in the development of materials as well as increase the amount of educational content available to teachers and students across the region. The ASEAN network and other country partnerships shall be used to share experience and approaches, share educational content and resources, establish ICT exchange programs for teachers and students, among other initiatives.

Public and Private sector education stakeholders must continue to explore the applications of mobile technology in the education sector. It is essential that the ongoing proliferation of mobile devices throughout the developing world collaborates with the education sector to effectively put to good use the mobile phones that so many young students in developing countries have today.

Government will develop innovative partnerships with the private sector and local organizations, including schools, universities, government agencies, community service organizations, nonprofits, and small businesses, to implement and train local people in new technologies.

3. Develop a gender sensitive national database on education related information and a system of assessing the Digital Literacy (on national level)

The relevance of an appropriate database on educational information related to actions on digital literacy has to be underscored in developing plans, policies, programs and projects. There is a dearth of information on digital literacy. The implementation of the PDS calls for the conduct of surveys and studies to develop a national database on digital literacy, with the end in view of establishing relevant national policies, plans, programs and projects. The database contents need to consider the gender aspects to ensure that subsequent analysis can determine any differences between men and women. Impact studies on ICT trainings and on the utilization of ICT with productivity levels of the industry and government are likewise essential to assess the usefulness of ICT in education/training and adoption of a national standard performance and productivity measures for ICT education, training and graduates.

The government, together with the private sector and academe, shall develop a database which will include, amongst others, information on skills requirements of the industry and skills available by gender. At the same time, government, at all levels, will also ensure that the database is regularly updated and information analyzed to indicate trends, areas to strengthen or other developing issues. The private sector and academe can provide the resources for critical analysis of data and, working together with government and other key stakeholders, formulate improvements in the programs and processes to expand digital literacy and other targets. The database and reports generated from its information can serve as a good foundation for future iterations of the PDS and its programs.

4. Implement an incentive-based professional development program for teachers, educators and trainers

Beyond training teachers/educators/trainers on how to use ICT, it is essential that focus be given to training teachers and instructors to productively use ICT to develop their own teaching support materials. This approach assures ownership by teachers and instructors and enhances the usability of products. Many projects still focus on using materials for teachers and students that have been developed externally. However, such materials often fall short of providing appropriate or relevant content for the local situation.

Incentives that encourage teachers/educators/trainers to effectively use ICT in the delivery of education and in their administrative work will be established. The incentives can take different forms – post-training access to technology resources; public recognition for those who complete professional development programs; formal certification of earned professional development training leading to a degree, among others.

Teachers can work together with both public and private sector stakeholders to establish Centers of Excellence and virtual networks (e.g., Philippine Education Portal) that support them in their transition to ICT-based education. Online knowledge sharing networks (in the form of Communities of Practice) to facilitate this process need to be established for use by teachers at all levels.

Training programs are provided through activities like "student-teacher-industry experts exchange/immersion programs," and academic linkages/multi-sector educational alliances, e.g., eQuality Program. Regional teacher training facilities are required to successfully train teachers on a continuous basis. At the same time, such facilities, associations and networks can be used to provide continuing support to educators, teachers and trainers as they move on in their work to expand the use of ICT in their academic and training activities. This support is critical if newly trained teachers and related personnel are to gain the confidence in their evolving role and continue to implement the programs needed to bridge the digital divide and produce more ICT competent graduates or trainees.

5. Address the shortfall of skilled workforce for the ICT and ICT-enabled Industries

A joint effort among government, private sector and academe shall be strongly encouraged to address medium to long-term issues regarding ICT education and talent. This includes but is not limited to:

- Assessment of ICT competency levels and identify gaps to industry requirements;
- Professional Certification Program based on a National Competency Standard (ladderized from basic to advanced);
- Adoption of Joint industry-Academic Certification (internationally recognized);
- Adoption of Institutional Certification, e.g., ITIL, CMM, COPC, ISO;
- Promotion of Academic-Industry Linkages/Programs;
- Expertise building for high-end niche skills in ICT and ICT-enabled industries to include the creative industries;
- Implementation of Quality Assurance Program for training institutions; and
- Provision of incentives to retain skilled personnel in their industries.

A sub-program of the Workforce Mobilization Program (WMP) called the 'Near Hire' scheme has successfully upgraded skills of participants leading to 70% being hired by the IT/BPO industry in 2008 and 2009. CICT, TESDA and CHED shall continue their partnership on this program, include relevant industry associations and develop a similar program for the next 5 years to address the shortfall of qualified staff in the IT/BPO sector.

6. Develop the skills of technopreneurs to be globally competitive

Technopreneurs or Technology Entrepreneurs in this strategy refers to two types: 1) entrepreneurs with ICT as its core business; and 2) entrepreneurs that use ICT to enhance their business. Focus would be given to mSMITEs (micro, small, medium IT entrepreneurs) and establish programs that would include:

- ICT technopreneur skills development program;
- ICT technopreneur incubation/innovation fund and awards;
- ICT technopreneur fair; and
- (Joint) government- industry-academe (GIA) linkages program.

The programs to help technopreneurs will consider the value chains of their respective businesses especially where interventions can have the most value. For ICT enterprises, common issues may revolve around improving technical skills and use of available resources to keep up with changing technology and customer demands. For businesses that desire to improve their operations using ICT, there is a need to understand the cost/benefit considerations of technology and how it can improve company performance. All businesses, both ICT and non-ICT, need help in improving productivity, managing costs and using business information strategically to remain competitive in the global market. At the same time, entrepreneurs also need to learn more about using ICT in a more environmentally friendly manner. For micro companies, training programs will be gender sensitive since a number of proprietors of micro and small enterprises in the country are women.

7. Address ICT literacy and competency needs of special sectors

The focus of government is building social capital of special sectors to improve their quality of life. The government shall provide access to opportunities for those with special needs, specifically for the youth, women, persons with disabilities, indigenous people/minorities, Overseas Filipino Workers, and others to be identified based on their specific needs. Policies will be reviewed to promote ICT adoption and use among special sectors. Skills Development Programs that enhance their abilities and addresses their requirements shall be implemented to enable them to be mainstreamed into the knowledge society. Content of digital resources and media will carefully consider their special conditions and requirements.

The youth are the most vulnerable sector to the negative effects of ICT. Effective advocacy campaigns are to be vigorously undertaken to ensure responsible use of ICT. The youth are likewise the driving force in the development of the country. Jose Rizal, our National Hero, said "The Youth is the Fair Hope of My Fatherland." The value of nationalism will be emphasized at an early age, with the youth, such that content will be developed that promotes local culture, arts, history and values.

5.5 INSTITUTIONAL IMPLEMENTATION ARRANGEMENTS & FUNDING

Table 5.3 – Institutional Implementation Arrangements & Funding: Investing in People

ACTION	LEAD AGENCY & KEY PARTNERS	FUNDING APPROACHES
Strengthen reforms in the educational system to produce digitally literate graduates	> DEPED > CHED, TESDA, CICT > Academe > Local Education Councils/ Committees	> Government Funding > ICT in Education Fund
Strengthen existing or develop governance structures and partnerships on education	> CHED, DEPED, TESDA, CICT > Academe	> Government Funding > ICT in Education Fund
Develop a national database on education related information and a system of assessing the Digital Literacy (on national level)	> CHED, DEPED, TESDA, CICT > Academe	> Government Funding > ICT in Education Fund > PPP
Implement an incentive-based professional development program for teachers, educators and trainers	> CHED, DEPED, TESDA, CICT > Academe > NGOs or foundations with education thrust	> Government Funding > ICT in Education Fund > PPP
Address the shortfall of skilled workforce for the ICT and ICT-enabled Industries	> CHED, DTI, TESDA, CICT > Academe > Industry associations > Local ICT Councils	> ICT in Education Fund > PPP
Develop the skills of technopreneurs to be globally competitive	> CHED, TESDA, CICT, DTI > Academe	> ICT in Education Fund > PPP
Address ICT literacy and competency needs of special sectors (youth, women, PWDs, indigenous people, among others)	> CHED, DTI, TESDA, CICT, NCIP, PCW > Academe > Local ICT Councils > NGOs, civic groups, or foundations	> Government Funding > ICT in Education Fund > PPP

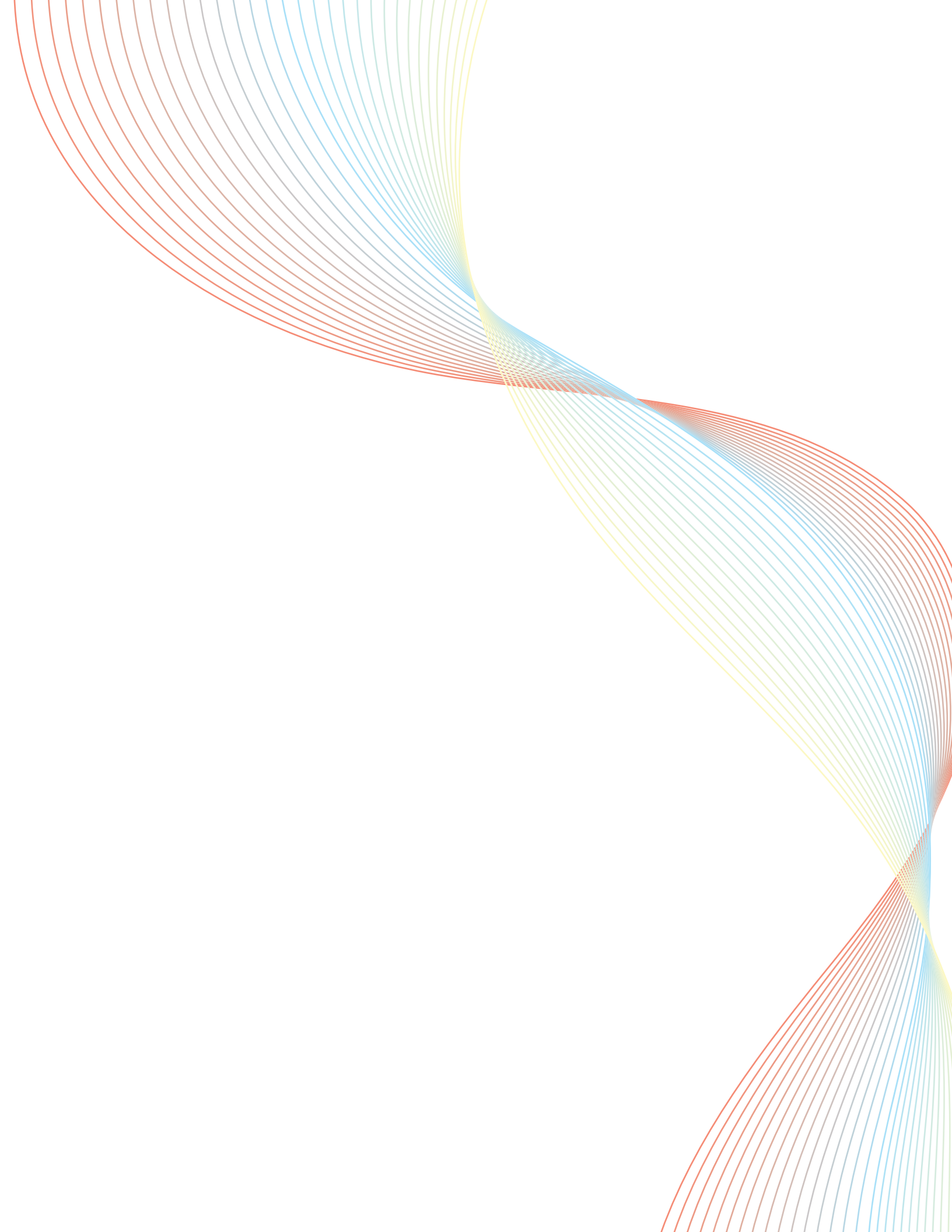
5.6 MILESTONES: MEASURING PROGRESS

Table 5.4 – Milestones for Key Actions: Investing in People

ACTION	KEY MILESTONES	2011	2012	2013	2014	2015	2016
Strengthen reforms in the educational system to produce digitally literate graduates	National Policy Framework for ICT4				●		
	Competency standards and training for teachers					●	
	Education Portal						●
	Assessment of Digital Literacy Skills						●
Strengthen existing or develop governance structures and partnerships on education	Regional ICT Centers					●	
Develop a national database on education related information and a system of assessing the Digital Literacy (on national level)	Baseline study				●		
	National Database					●	
	Digital Literacy Rate Model						●
	National Standard on performance and productivity						●
	Impact Assessment						●
Implement an incentive-based professional development program for teachers, educators and trainers	ICT4E Centers of Excellence						●

INVESTING IN PEOPLE: DIGITAL LITERACY FOR ALL

ACTION	KEY MILESTONES	2011	2012	2013	2014	2015	2016
Address the shortfall of skilled workforce for the ICT and ICT-enabled Industries	Funding Program for near hires	●					
	Philippine Creative Digital Content Development Program		●				
	National ICT Competency Program/ Professional Certification Program			●			
	Quality Assurance Program for training institutions			●			
	Expertise Building Program for high-end niche skills				●		
Develop the skills of technopreneurs to be globally competitive	mSMITE Program		●				
	ICT Technopreneurs Skills Development Program			●			
Address ICT literacy and competency needs of special sectors (youth, women, PWDs, indigenous people, among others)	Skills Development Programs		●				
	Content Development Programs			●			



6. ICT INDUSTRY AND BUSINESS INNOVATION FOR NATIONAL DEVELOPMENT

ICT INDUSTRY AND BUSINESS INNOVATION FOR NATIONAL DEVELOPMENT

6.1 WHY ICT-INDUSTRY AND USE OF ICT IN BUSINESSES IS IMPORTANT

The ICT industry, in particular the IT/Business Process Outsourcing (BPO) industry, is already a very important factor in our economy with over half a million full-time employees, between 4% and 5% contribution to GDP and its status as the number one BPO location in the world. Its continued growth is important for the socio-economic development of our country.

The Philippine IT/BPO industry includes:

- Contact/call centers;
- Business process outsourcing or BPO (finance & accounting, HR, payroll);
- Knowledge process outsourcing or KPO (marketing research, medical research, legal case research & preparation, insurance, mortgage);
- Medical, legal and other data transcription;
- Creative process outsourcing or CPO (film animation; software development; engineering and construction design); and
- Game development or digital content development such as music, information, and images.

In addition to the ICT-enabled services (ITES) such as BPO, the ICT sector comprises three additional subsectors: Hardware/components; software products, and direct ICT services.

While the ICT sector is important, equally important are the many industries, entrepreneurs and companies that rely (or could rely) on ICT for greater profitability. By incorporating ICT into their production processes, value chains and sales efforts; many industries such as agriculture, fisheries, tourism and micro, small and medium-sized companies can realize important gains through productivity improvements, cost savings and improved marketing. As reported by United Nations Conference on Trade and Development (UNCTAD), ICTs can play a key role in poverty alleviation and job generation by increasing an enterprise's "capacity to generate wealth, employment, exports and innovations that will have a more sustainable impact on the long-term growth and productivity."

Larger companies have more resources and capacity to integrate ICT into their work processes, so government help is needed to assist micro, small and medium-sized enterprises (MSMEs) become more aware of the benefits derived from incorporating ICT into their business and provide mechanisms (financing, etc.) to take advantage of these benefits, particularly for key industries where these benefits can be substantial.

Given this, ICTs have a key role to play in achieving President Aquino's vision of generating jobs in the economy – through growth in the ICT industry itself and through growth in other industry sectors that use ICT to become more successful. This strategic thrust is about enabling a digital economy that creates jobs and opportunities for both urban and rural people and fosters national development, and supporting industries to become more competitive and innovative, creating employment and economic growth.

6.2 MAIN OBJECTIVES

TThe main objectives of the "ICT Industry and Business Innovation for National Development" strategic thrust of the PDS are the following:

- Support micro, small and medium businesses in key industries to become more productive, innovative and globally competitive, thereby increasing exports, employment and wealth;
- Strengthen capacity in the high value ICT-related service sector;
- Increase ICT and ICT-enabled jobs, especially in the regions;
- Increase ICT innovations and their commercialisation;
- Increase local original digital content and media (software, applications, online media, entertainment, etc.);
- Increase global recognition and visibility of the Philippines ICT sector and its companies to attract more business and investment; and
- Expand and improve ICT research and development, innovation and manufacturing.

The above objectives all converge around making our country a leader in the high-value segment of the ICT and ICT-enabled service industry. The overall aim is enabling entrepreneurs, companies and industries to be more innovative and take advantage of ICT to improve their products, services and exports, and create prosperity and employment.

6.3 MEASURABLE TARGETS

Specific measurable targets are as follows:

1. Increased use of ICT among MSMEs

- Over 90% of registered companies use the Internet by 2016, from below 80% in 2008;
- Over 60% of registered companies have a web-site by 2016, from below 50% in 2008;
- Over 30% of registered companies use ICTs for e-commerce by 2016, from below 20% in 2008[xv] and;
- 10% increase of ICT usage among micro-companies over baseline data to be established.

2. Investment increase and more business for the IT/BPO industry and ICT sector

- Over USD 20 Billion IT/BPO revenue by 2016, up from USD 8.9 Billion in 2010;
- Over 9% of global BPO market by 2016, up from 8% in 2010; and
- Increase international IT competitiveness ranking (based on agreed standard).

3. Enhanced high-value ICT capacity and higher number of ICT-related jobs

- Exceed 900,000 FTE in IT/BPO industry by 2016, from 525,000 in 2010;

> Over 40% ICT jobs outside Metro Manila by 2016, from 25% in 2010;
> Over 50% of IT/BPO business is non-voice related by 2016, from 20% in 2010;
> Increased number of IT graduates to 60,000 by 2016, up from 38,809 in 2009; and
> Increase in ICT-related PhDs over baseline data.

4. Higher rates of innovation and their commercialization

> Increase in number of commercialized ICT patents and copyrights over baseline data (National office patent applications/million pop is 1.9 in 2010[xvi]).

5. Higher rates of investments in ICT Research & Development

> Increase in spending on ICT Research & Development over baseline data; and
> Increase in original digital content over baseline data.

The specific targets are summarized in Table 6.1 below:

Table 6.1 – Targets: ICT Industry and Business Innovation for National Development by 2016

ICT usage among MSMEs	Attract investment & business	High-value ICT capacity & increased jobs	Innovation & commercial success	Investments in ICT R&D
90% of registered companies use the Internet 60% of registered companies have a web-site 30% of registered companies use ICTs for e-commerce 10% increase of ICT usage among micro-companies over baseline data	Over USD 20 billion IT/BPO revenue Over 9% of share global BPO market Increase international IT competitiveness ranking	Exceed 900,000 FTE in IT/BPO industry Over 40% ICT jobs outside Metro Manila Over 50% of IT/ BPO business is non-voice related Over 60,000 IT graduates Increase in ICT-related PhDs over baseline data	Increase in number of commercialized ICT patents and copyrights over baseline data	Increase in spending on ICT Research & Development over baseline data Increase in original digital content over baseline data
Objectives that are supported through the achievements of the targets				
Support MSMEs	Global visibility, increased investment & business	Increase ICT-related jobs High-value ICT capacity	Increase ICT innovations	Increase in original digital content Improve ICT R&D

6.4 KEY ACTIONS

The following table provides an overview of the key actions which will further spur the growth of the ICT industry and other industries that use ICT.

Table 6.2: Description of Key actions: ICT Industry and Business Innovation for National Development

ACTION	DESCRIPTION
1. Provide knowledge, tools and enhance capacity for micro and small business in several industry sectors to take advantage of ICT	> ICT for business portal, with advice, support and free or low cost applications (offer subscription-based software through cloud computing) > Focus on how companies/industries can integrate ICT into their value chains while addressing gender, environment and other related considerations > ICT for business workshops in collaboration with ICT Councils and local chambers of commerce > Creation or strengthening of specific industry ICT sector strategies led by industry associations > Consider tax rebates or other fiscal measures to encourage ICT purchases from SMEs > Review whether and how government financing institutions (GFIs) of the SME Unified Lending Opportunities for National Growth (SULONG) can support increased ICT investments by SMEs > Communicate and promote the benefits of incorporating ICT into mainstream enterprises particularly for micro and small firms.
2. Create environment for continued job growth in ICT and ICT-enabled industry jobs, particular in the regions	> Nationwide gender sensitive campaigns for ICT careers > Continued development and promotion of additional next wave cities > Strengthen the regional ICT councils to raise ICT awareness regarding its job growth opportunities
3. Prepare strategic marketing and brand management plan	> Strengthen ICT industry capacity for strategic and market planning > Strategic participation and promotion in global BPO and ICT industry events and trade missions > Engagement with global outsourcing organizations and research firms to promote the industry, e.g., a webinar > Advertorials in leading global business publications and TV programs > Internal marketing to national, provincial and local government

ACTION	DESCRIPTION
4. Foster an environment that attracts investments for ICT research, innovation, development & manufacturing	> Engagement and collaboration with private sector in the development and improvement of innovation ecosystems for ICT R&D > Provide incentives for private sector investment in ICT R&D, e.g., tax holiday for a number of years from commercialization > Create, expand and strengthen business incubators > Expand number of post graduate IT holders available for R&D work
5. Support development of digital content/media (e.g., software, applications, gaming, animation, electronic publishing, etc.)	> Intellectual Property Rights reform in light of digital content/media > Technology boot camp for digital content developers to be modeled after DOST-ASTI technology bootcamp for emerging entrepreneurs > Continue incentives to encourage entrepreneur and smaller companies engaged in digital content development > Workshops on IPR registrations in collaboration with ICT Councils

1. Provide knowledge, tools and enhance capacity for micro and small business in several industry sectors to take advantage of ICT

In order to increase productivity, global competitiveness, innovation and cost reductions among Filipino companies, especially SMEs, there needs to be an increase in the number of enterprises using ICTs not simply for word processing, but for critical business processes such as value chain management, e-commerce, human resource management, customer relationship management, and enterprise resource management. Developments such as cloud computing can reduce the costs to SMEs of integrating more ICT into their operations.

In order to increase ICT use amongst MSMEs, activities must center on the following:

> Awareness raising and increasing knowledge on the value of ICT use;
> Capacity building and technical support; and
> Financial incentives.

Another key element of this strategy will be to collect more detailed data about how companies in certain sectors use ICT. This will create a nascent baseline study that can be used for goal setting and future measurement. Additional specific objectives shall be developed on a sectoral basis as to what increased ICT usage rates shall be achieved by 2016.

Business portal and workshops

The ICT for business portal, developed in partnership with relevant industry associations, shall be integrated with e-Government services and focus on businesses. Financing of the portal's maintenance may draw on a range of resources including industry sponsorship. While many local or foreign ICT companies may be interested in sponsoring this site, it is important that the site remain impartial and does not promote certain vendors.

A generic format of an "ICT for business" workshop shall be developed in collaboration with ICT Councils and local chambers of commerce. This shall incorporate innovative delivery elements such as short videos, online training modules and video-conferencing presentations. The purpose is to make it replicable and less dependent on individual presenters or trainers. Also, this will minimize or eliminate situations where presentations are wholly vendor driven and thus, biased for the vendors' products or services. The workshop can also help promote the practice of green ICT among smaller companies which collectively make up a large proportion of enterprises in the country.

Specific ICT industry sector strategies

The incorporation of ICT, suitable for the different actors involved, is particularly productive if used throughout an industry "cluster" i.e. a group of interconnected producers, suppliers and service providers. This allows the involved players to achieve significant economies of scale despite growing international competition.

To take advantage of these, industry-specific ICT strategies shall be developed that detail the options of integrating ICT and the beneficial impact of increased ICT use, e.g., within the enterprise value chains, of that particular sector. The following sectors shall be included based on their close relationship to poverty alleviation:

- Agribusiness and fisheries;
- Tourism (including hotels and restaurants);
- Education administration;
- Health care;
- Retailing; and
- Small-scale manufacturing.

Other sectors can be added. Teams will be formed and will determine possible interventions (e.g., content development, support networks, cloud-based applications) to maximize ICT usage in their respective sectors/value chains. Key factors such as the size of the enterprises in the sector and gender make up of owners and workers will be considered to further fine tune the strategies and improve its relevance to the sectors. Government incentives for increased ICT usage may also be proposed. Industry certifications may be awarded to service providers who successfully integrate ICT according to certain minimum requirements of a sector's blueprint.

It is imperative that a lead organization from the specific industry/sector is identified to manage and sustain the effort (e.g., Philippine Medical Association for the Health Care sector, or Tourism Congress for the Tourism sector, etc.). CICT will assist and coordinate all the sectoral teams. CICT will also be a "match-maker" by tapping private sector industry associations (e.g., PSIA, ITAP) to "adopt" one industry or sector on an annual basis to assist in the creation of ICT strategies for that sector.

2. Create environment for continued job growth in ICT and ICT-enabled industry jobs, particular in the regions

- Raise awareness amongst provincial and local governments that by attracting more ICT-related businesses into their communities, this will translate into new jobs, increased economic prosperity and ultimately, an increase in overall tax income;

- Raise awareness amongst youth, women, and other job-seekers about the opportunities in ICT-related careers; and
- Continuous review and improve the attractiveness of ICT-related careers by the industry.

Continued development and promotion of additional Next Wave Cities

CICT and BPAP will continue to identify and promote additional Next Wave Cities in the Cyber Services Corridor and provide recommendations on how to develop their whole ecosystem, with a focus on talent and an enabling environment. Key elements will include:

- Streamlined government permits at the local level;
- Standardized local government permits and reporting requirements for ICT companies;
- A best practice handbook or toolkit. Some cities have been successful and can share their best practices with other cities. This best practice handbook or toolkit may be linked with DILG "Seal of Good Housekeeping" program;
- Strengthen government and industry dialogue through regular updates so that the partners are more aware of each others' situation, issues and possible concerns, and various roles and contributions to national and local development; and
- LGUs will also incorporate a clear economic agenda for ICTs in their development plans and any resulting policy adjustments to support ICT growth.

This strategy shall be managed by Department of Interior and Local Government (DILG) with the support of BPAP, CICT, and DTI. NICP can also provide localized support for assessment purposes.

Career Advocacy - Existing Program to be Expanded in scope

This shall include aggressive in-country promotion of various IT/BPO, KPO and CPO, and ICT-related jobs as viable careers (through festivals, job fairs, traditional media, social networks, etc.). BPAP, which can provide the content for the advocacy, and the National ICT Confederation of the Philippines (NICP), with its regional ICT councils that are perfectly located to execute the advocacy in their respective jurisdictions, shall cooperate on this initiative. The regional ICT councils shall also be involved to raise ICT awareness regarding ICTs' job growth opportunities. Local ICT or IT industry associations can also work towards strengthening the image of their respective sectors as viable career opportunities for young people. Differences in gender perceptions of the ICT industry may be determined to adopt more appropriate promotional activities for men and women.

3. Prepare strategic marketing and brand management plan

The development of a strategic marketing campaign and brand management plan (based on relevant market research) aims at raising the Philippines' profile as the #1 location for IT/BPO services and ICT overall. The marketing campaign will focus on new market development for the Philippines, particularly those within the Asia-Pacific and the European Union. Furthermore, it will emphasize increased sector capacities for KPO (marketing research, medical research, legal case research & preparation, insurance, mortgage); medical, legal and other data transcription; CPO (film animation; software development; engineering and construction design); and game development or digital content development.

Previous marketing efforts have had some success. The focus of this campaign will be, therefore, to expand its coverage in terms of new market sectors and countries in order to substantially grow and expand the IT/BPO and ICT industry. The key is to develop an "umbrella" country brand, which our cities and companies can then incorporate into their own specific campaigns. Synchronizing this effort with other international marketing

campaigns such as that of the Department of Tourism is common practice internationally (e.g., "Malaysia, Truly Asia" for tourism, and "Malaysia, Truly Business" for outsourcing) and shall be explored. In order to implement the campaign, a public/private inter-agency task force shall be established (similar to the "Tourism Congress") to ensure that private sector associations as well as all government agencies and offices (consulates, LGUs, etc.) are "on message." This will provide centralized ownership and accountability.

Beneficiaries of this strategy are cities that are interested in attracting more investment, and more IT/BPO companies, as well as the industry as a whole (and the country), through job creation and investments.

The campaign and plan will include

- Participation and promotion in global BPO and ICT industry events and trade missions;
- Engagement with global outsourcing organizations and research firms to promote the industry, e.g., a webinar;
- Advertorials in leading global business publications and TV programs; and
- Internal marketing to national, provincial and local government.

4. Foster an environment that attracts investments for ICT research, innovation, development & manufacturing

Enhancing our capacity and capability to innovate using digital technologies is important for our global competitiveness and productivity. ICT is also a great equalizer of opportunities; many innovative ICT applications are being developed in emerging markets rather than the developed world. The government can encourage this by creating a business and education culture that fosters innovation and promotes investment in ICT-related research and development.

The government will engage with mobile applications providers, software developers and digital content providers among other private sector players, as well as academe, universities and research institutions and government stakeholders, to discuss and identify what it can change to improve the innovation ecosystem and then implement those key measures.

This will include incubation facilities that can also assist with market access. These initiatives will help to reduce risk for entrepreneur start-ups and offer the opportunity of virtual economies of scale such as discounts, shared resources and cloud computing or subscription-based models for accessing business applications, development tools and platforms.

With its regional network of business advisors, DTI is well positioned to lead this key activity. DTI can also tap private sector industry associations (e.g., PSIA, ITAP) to "adopt" incubators on an annual basis to assist in the setting up of these facilities. Progressive LGUs can also actively participate in supporting business incubator facilities, strengthening linkages between industry and academe in their areas and in market development efforts for the local ICT industry.

5. Support development of digital content/digital media (e.g., software, applications, gaming, animation)

Digital content or digital media is generated from different electronic sources, created in various formats, and used in different ways. The content may be audio or visual or both, interactive or not, real time or archived, and it may be accessed, created, collected, delivered, managed, processed or stored. It may be described as 'soft infrastructure' and is equally important as 'hard infrastructure' like broadband connectivity.

An illustration of what Digital Content can include is provided in Table 6.3 below:

Table 6.3 : Digital Content Categories[xvii]

Media and entertainment applications	Non-entertainment	Government[xviii]	Network users
Publishing (books, magazines, comics, etc.)	Industrial and visual design	Public sector information for commercial re-use	Web sites
Film/Motion pictures	Software design and development	Research & Science	Blogs and podcasting
Animation (animation characters and avatars)	Business and professional content	Education	Virtual communities
Music	Advertising	Culture (e.g., digital libraries)	Digital photos and video files
Broadcasting/ Digital radio/Cable/ Interactive TV and other media	Fashion/design	Health	Art works
Software	Architecture/ professional services	Consultations, forums, and feedback	Code and application sharing
Computer and video games	Training and adult education	Census, statistical gathering and voting	Social networking/Wikis

As can be seen from the table above, government can be an important source of digital content and digital media through its e-Government services. It can also provide other data, information and services in digital format. The government will, therefore, support the local digital content and media industry by becoming a procurer of the services to develop its digital media and content, and by increasingly providing digital media and content. The other important role for government is to provide an enabling legal and regulatory framework for the digital content and media sector to thrive. Key elements include data privacy and security, cybercrime laws and enforcement measures and Intellectual Property Rights (IPR) reform in light of digital content/media (the former are already addressed under the strategic thrust "Internet for All"). IPR reform will be an important element of this action.

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Intellectual property rights reform

Online intellectual property generally concerns digital content that is produced, shared, sold, and stored. This content can include music, literature, artistic works; discoveries and inventions; picture and video content, or even words, phrases, symbols, or designs. It can be generated from private industry, public institutions, or from individual users. In certain cases the property rights are unknown or contested, and these are referred to as "orphan works." A key objective is to fertilise the creation of (legal) content and to allow for its sharing while protecting the rights of the owner.

Intellectual property, with its associate laws and policy, existed well before the digital age; however, the ease and speed with which this digitized information can be produced and distributed (or copied and manipulated) has necessitated the requirement for more modern governance. Intellectual property law generally concerns the granting of rights to an owner on a variety of assets. It allows owners the possibility of financial benefit and this can provide an incentive for the ongoing creation of, and investment in intellectual property, and in the case of patents, remuneration for research and development costs. However, it may also inhibit the spread of content if the laws and policies are too restrictive and applied too rigorously.

Without a modern law and policy on intellectual property, there is less of an incentive for creators to produce new content and more opportunity for copying, piracy, and plagiarism. In the case of orphan works, content runs a risk of not being released into the digital world due to a fear of future legal recourse by the yet-to-be-identified owner. Without adequate governance, there will be less innovation, sharing, and possibility for enjoyment and learning, and thus the review and reform of our IPR is crucial.

6.5 INSTITUTIONAL IMPLEMENTATION ARRANGEMENTS & FUNDING

Table 6.4 – Institutional Implementation Arrangements & Funding: ICT Industry and Business Innovation for National Development

ACTION	LEAD AGENCY & KEY PARTNERS	FUNDING APPROACHES
Provide knowledge, tools and enhance capacity for micro and small business in several industry sectors to take advantage of ICT	> DTI > CICT, ICT Councils, national and local chambers of commerce	> Private sector sponsorship, government funding
Create environment for continued job growth in ICT and ICT-enabled industry jobs, particular in the regions	> BPAP > CICT, DILG	> BPAP, government funding
Prepare strategic marketing and brand management plan	> DTI > CICT, DOST, public and private universities	> Private sector sponsorship, government funding
Foster an environment that attracts investments for ICT research, innovation, development & manufacturing	> DTI > CICT, DOST, public and private universities	> Government funding, ODA
Support development of digital content/media (e.g., software, applications, gaming, animation, electronic publishing, etc.)	> CICT > BPAP	> Government funding, ODA

6.6 MILESTONES: MEASURING PROGRESS

Table 6.5 – Milestones for Key Actions: ICT Industry and Business Innovation for National Development

ACTION	KEY MILESTONES	2011	2012	2013	2014	2015	2016
Provide knowledge, tools and enhance capacity for micro and small business in several industry sectors to take advantage of ICT	Over 85% SMEs use Internet			●			
Create environment for continued job growth in ICT and ICT-enabled industry jobs, particular in the regions	Over 700 FTEs				●		
Prepare strategic marketing and brand management plan	Marketing plan launch		●				
Foster an environment that attracts investments for ICT research, innovation, development & manufacturing	Increase in ICT patents			●			
Support development of digital content/ media (e.g., software, applications, gaming, animation, electronic publishing, etc.)	IPR done		●				

7. MOVING FORWARD

MOVING FORWARD

The support and participation of all sectors will be essential to the implementation and success of the Philippine Digital Strategy. A digital strategy requires the transformation of the whole society from its institutions to all individuals who are part of it. It is therefore important that beyond just crafting this document, every sector of our society takes a part in its implementation and is engaged in one way or another in ensuring that the strategies and programs are put into effect in a cohesive and coordinated manner.

The following are the key areas to consider as we move forward with the PDS.

Institutionalizing the PDS

1. Executive Mandate – It has been established in the PDS that ICT is an essential component of national development. It is in recognition of this that all instrumentalities of government, both national and local, understand their role in moving our country into the digital age. This will require a strong signal from the President defining the responsibility of each institution in this effort by promulgating either an Executive or an Administrative Order. The implementing rules and regulations of such an order will indicate the responsibilities of specific agencies of government which will be accountable for the success of each phase of the PDS implementation.

2. Philippine Development Plan 2011-2016 – Since the PDS was aligned to the goals of the PDP in its development, the programs and strategies identified in it need to be incorporated by the respective agencies into their planning process. This will ensure that ICT projects for each department become part of their annual budgeting process.

3. Legislative Agenda – The PDS identifies critical legislation necessary for ICT development. It is important that these be included in the legislative agenda of the Office of the President and if necessary, be included in those classified as urgent.

4. E-Government Fund – The PDS identifies delivery of social service as a priority in e-Government implementation. The allocation of the yearly e-Government fund will be aligned and earmarked to strategically support ICT projects for agencies responsible for the delivery of these services to the public.

Raising Public Awareness of ICT

1. Rallying Civil Society – The general public need to be educated on the role that ICT plays in improving their status in life through better education and access to information. For both the traditional and the marginalized sectors of our population, civil society will have a major role in this effort and will be engaged as a major partner for promotion and advocacy activities for ICT, including green ICT practices.

2. Media – ICT will have to be elevated as a national issue which can impact the lives of both the rich and the poor. It will no longer be relegated in the back pages and special features of media but made a part of day-to-day issues and challenges which confront our society. Traditional media (print and broadcast) will play a major role in this undertaking and their interest and support will be harnessed.

3. Social Networks – The use of social networks (e.g., Facebook and Twitter) have to be an important element of the Communication strategy of the PDS. SMS technology has proven also to have the widest reach and will also be an essential resource in raising this awareness.

MOVING FORWARD

Mobilizing the Private Sector

1. Business and industry organizations – Partnering with business groups and industry associations in the implementation of the strategies and programs of the PDS is imperative not only in ensuring its success but also in pressuring government institutions to move forward in developing ICT through policy reforms and changes. They will also provide valuable support in raising general public awareness on ICT and its benefits to improving quality of life.

2. IT and Telecommunications Companies – These businesses will be the direct beneficiaries of the acceleration of ICT development in the country. They will be motivated to act as an industry and provide innovative products and services which will address the computerization needs of government and the general public. Developments such as Cloud Computing, IPV6, new generation networks have to be spearheaded by the industry leaders. Investments will be increased to spur development of systems particularly with government.

3. Public-Private Partnerships – With PPP as a major initiative of this government, the ICT industry will develop models where private sector investments can be made to develop systems that will deliver government services to the public, as well as expand networks to allow for providing access to currently unserved areas of the country. The ICT industry will be included in the PPP initiative which has been spearheaded by the construction industry through a PPP council.

Rallying International Support

1. International funding agencies – Most international funding and donor agencies (US-AID, CIDA, JICA UNDP, WB, ADB) have ICT projects in their portfolios. There is a need to funnel these to support the strategies and programs identified in the PDS. This will ensure more effective programs which are all consistent with national priorities.

2. International Organizations – The PDS will be presented to international and regional bodies (ITU, APEC, ASEAN, etc.) for alignment with their initiatives, exchange of best practices, and enable the PDS to avail of funding support.

3. International ICT Events – The PDS will have a presence in key ICT global events such as IT Summits, conferences and fora to enable exposure with the international audience and foreign entities who may be in a position to provide assistance or exchange of resources or know-how with Philippine stakeholders of the PDS.

END NOTES

[i] Examples are: UK: Digital Britain (2010), EU: Digital Agenda for Europe (2010), Australia: Australia's Digital Economy – Future Directions (2009), Norway: eNorway 2009 – The Digital Leap (2009), New Zealand: Digital Strategy 2.0 (2008), The Netherlands: ICT Agenda 2008-2011 (2008), Chile: Digital Development Strategy 2007-2012 (2007), South Korea: u-Korea Masterplan (2006), Singapore: Intelligent Nation 2015 (2005). The topics typically addressed in ICT strategies or digital strategies include: Universal Access, Digital Inclusion, Broadband Infrastructure, Next Generation networks; Enabling policies, legislative and regulatory framework; Digital Media, Content, Creative Industries; e-Government and e-Governance; Interoperability, Standards; Security/Consumer protection; Research, Innovation; Skills, Training, Education

[ii] International Telecommunications Union (ITU), eGovernment – ITU eGovernment Implementation Toolkit; A Framework for e-Government Readiness and Action Priorities, Part 1- Introduction eGovernment Readiness Assessment Framework, 2009

[iii] The UN-ASPA Five Stages of e-Government describes this as Stage 3 or Interactive Web Presence where governments deliver online services and citizens can download and submit forms, and there are interactive features such as chat rooms and discussion board.

[iv] The UN-ASPA Five Stages of e-Government describes this as Stage 4 or Transactional Web presence where governments begin to transform themselves by introducing online payments.

[v] Governments transform themselves into a connected entity that responds to the needs of its citizens by developing an integrated back office infrastructure.

[vi] Further information about these programs can be found online or go to www.ncc.gov.ph or www.cict.gov.ph

[vii] Philippine Integrated Postal Reform and Development Plan, developed by CICT, PHILPOST with the assistance of UPU, December 18, 2010

[viii] As of July 2009, Human Development Index 2010, Philippines, UNDP

[ix] http://www.indexmundi.com/philippines/labor_force.html

[x] Graduates should possess 21st Century Skills (Core Subjects and 21st Century Themes; Learning and Innovation Skills (creativity and innovation, critical thinking and problem solving, communication and collaboration); Information, Media and Technology Skills (information literacy, media literacy, ICT literacy), and Life and Career Skills) as enumerated by The Partnership for 21st Century Skills

[xi] An individual possess combination of technical and managerial competencies that make him/her flexible to move horizontally or vertically, as may be required by the work place.

[xii] Relevant indicators on sex-aggregated data are to be generated whenever appropriate.

[xiii] Regional ICT Centers may be situated in higher education institutions, or a separate structure that is LGU based or a project that Regional ICT Councils may adopt. The RICs is where citizens can go for training, certification

[xiv] It is a program that intends to stimulate the creative economy by providing financial and technical/education support to local creative business, content developers, artists and students. It seeks to identify, develop, and support Filipinos to produce original content in animation, comics, and game development, with heavy emphasis on concept, content, and delivery. The project aims to raise the skill level of Filipinos from being merely technically adept into those who can create original Filipino content.

[xv] Based on the 2008 Survey conducted by the National Statistics Office in collaboration with the CICT (2008 SICT Report)

[xvi] The Global Information Technology Report 2010-2011, Transformations 2.0, INSEAD/World Economic Forum

[xvii] Concept from OECD

[xviii] Academia, NGOs, civil society or foundations may also be contributors to this category

GLOSSARY

GLOSSARY

Blogging – is a frequent, chronological publication of personal thoughts and Web links.

BPO – is a type of outsourcing that involves contracting the operations and responsibilities of specific business functions or processes to a third-party service provider.

Chat rooms – is a term describing any form of conferencing conducted via information technologies. It can mean any technology ranging from real-time online chat, instant messaging and online forums to fully immersive graphical social environments.

Cloud computing – is a term describing the delivery of hosted services over the Internet. These services are broadly divided into three categories: Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS) and Software-as-a-Service (SaaS). The name cloud computing was inspired by the cloud symbol that's often used to represent the Internet in flowcharts and diagrams.

Crowd-sourcing – is the act of outsourcing tasks normally performed by an employee, to an undefined, large group of people or community (a "crowd") through an open call.

Cyber – is a prefix used to describe a person, thing, or idea as part of the computer and information age.

Cybercrime – is generally defined as a criminal offence involving a computer as the object of the crime (hacking, phishing, spamming), or as the tool used to commit a material component of the offence (child pornography, hate crimes, computer fraud). Criminals can also use computers for communication and document or data storage.

Digital literacy – is the ability to use information and communications technologies to access, explore, define, organize, integrate, evaluate, analyze, create, transform and communicate new information and knowledge responsibly and effectively into productive use.

E-Consultation – The government website provides the tools necessary for e-consultation. It allows citizens to set the agenda for the debate through e-petitioning. The government ensures that its elected officials have a website to communicate directly with their constituents. It maintains an archive of their discussions and provides feedback to citizens.

E-Decision-Making – The government is willing to take into account the e-inputs of citizens into the decision making process. The government informs its citizens on what decisions have been taken based on the consultation process.

e-Governance – is the public sector's use of ICTs with the aim of encouraging citizen participation in the decision-making process and making government more accountable, transparent and effective.

e-Government – is the utilization of the Internet and the world-wide-web for delivering government information and services to citizens.

E-Information – The government website offers information on the list of elected officials, government structure, policies and programmes, points of contact, budget, laws and regulations and other information of public interest. Information is disseminated through a number of online tools such as: community networks, blogs, web forums, text messages (micro democracy), newsgroups and e-mail lists.

e-learning – refers to a situation where information technology is used to enable the sharing and use of educational instruments.

GLOSSARY

Fibre optic backbone – describes a technology that uses glass (or plastic) threads (fibres) to transmit data. A backbone is a larger transmission line that carries data gathered from smaller lines that interconnect with it.
GIS – or "geographic information system" is a system that captures, stores, analyzes, manages and presents data with reference to geographic location data.

Global village – refers to the instantaneous movement of information from everywhere at anytime and describes a virtual contraction of the globe into a village.

Green ICT – refers to an approach in reducing the energy and other resources consumed and the emissions and other waste produced across the ICT lifecycle - from manufacture, procurement and use of ICT in an organization through to its re-use, and aims to improve environmental sustainability of organizations

Herfindahl-Hirschmann Index – is a popular measurement to determine the level of competition and define the market share across companies within a market or industry.

ICT4E – is an acronym for "information communication technologies for education." Its meaning does not (yet) provide a more precise definition.

IPV6 – or "Internet Protocol version 6" is a set of upgraded specifications from the Internet Engineering Task

Force (IETF). Devices can use IPv6 as source and destination addresses to pass packets over a network.

IT-Back-office – refers to the part of most agencies/corporations where tasks dedicated to operating information technology networks and services takes place.

Last mile – is the final leg of delivering connectivity from a communications provider to a customer.

ListServs – is an electronic mailing list software application consisting of a set of email addresses for a group in which the sender can send one email and it will reach a variety of people.

Mobile phone penetration – is a term generally used to describe the number of active mobile phone numbers (usually as a percentage) within a specific population.

Next generation networks – less commonly known as "new generation networks" is the term given to describe a telecommunications packet-based network that handles multiple types of traffic (such as voice, data and multimedia). It is the convergence of service provider networks that includes the public switched telephone network (PSTN), the data network (the Internet), and the wireless network.

Next Wave Cities – a Philippine-specific term that identifies ICT hubs beyond Manila, based on criteria such as worker supply, telecom infrastructure and other factors necessary to sustain a local BPO industry.

Online one-stop shops – generally refers to a central portal that gives an Internet user the ability to conduct a range of transactions.

PPP – or "public-private partnerships" is a term describing when private sector entities perform business activities, but that a sharing of resources, risks and benefits between the parties is involved.

GLOSSARY

RSS feeds – or "Really Simple Syndication" is the acronym used to describe the de facto standard for the syndication of Web content. RSS is an XML-based format and while it can be used in different ways for content distribution, its most widespread usage is in distributing news headlines on the Web.

SMS – or "short message service" is the text communication service component of communication systems using standardized communications protocols that allow the exchange of short text messages between (mainly) mobile phone devices.

Spectrum – refers to the entire range of electromagnetic frequencies used for communications which includes frequencies for radio, radar, wireless telecommunications, and television uses.

Technopreneur – or "technology entrepreneurs" are either : 1) entrepreneurs in which ICT is the core business ; or 2) entrepreneurs that use ICT to enhance the business.

Tele-health – describes a health service that is delivered through a telecommunications medium.

Teleworkers – describes a situation where information technology is used to enable work outside a traditional office environment.

VOIP – or "voice over Internet protocol" is a technology that allows telephone calls to be made over computer networks like the Internet. VoIP converts analog voice signals into digital data packets and supports real-time, two-way transmission of conversations.

VPN – or virtual private network is a secure way of connecting to a private network at a remote location using the Internet. The VPN can be used to send any kind of network traffic securely, including voice, video or data.

Web 2.0 – is the term given to describe a second generation of the World Wide Web that is focused on giving users the ability to collaborate and share information online. It refers to the transition from static HTML Web pages to a more dynamic Web that is more integrated and is based on serving Web applications to users.

Wikis – are websites that allow the creation and editing of any number of interlinked web pages via a web browser. They are typically used collaboratively by multiple users. Examples include community websites, corporate intranets, knowledge management systems, and note services.

ANNEX 1: SUMMARY LIST OF TECHNICAL WORKING GROUPS, FOCUS GROUP DISCUSSION, AND WORKSHOPS CONDUCTED (AS OF APRIL 2011)

1.1 Summary list of participants per sector and per event

EVENT TITLE	DATE/S	VENUE	NO. OF PAX			DISTRIBUTION				
						Public Sector		Private Sector	ICT Industry Association	Civil Society/Academe
			TOTAL	MALE	FEMALE	NGAs	LGUs			
Technical Working Group										
Organizational Meeting of the TWGs	Sep. 23, 2010	Discovery Suites, Ortigas Center, Pasig	35	14	21	23			11	1
TWG-Infrastructure	Oct. 27, 2010	OSec Conference, CICT, Diliman, Quezon City	11	7	4	9		1	1	
TWG-Human Capital	Oct. 27, 2010	Innotech Lab, 2F CICT Bldg., Diliman, QC	5	2	3	4			1	
TWG-e-Governance	Oct. 28, 2010	AVR GF CICT Building, Diliman, Quezon City	7	1	6	6		1	1	
TWG-Cyberservices	Oct. 28, 2010	OSec Conference, CICT, Diliman, Quezon City	9	6	3	6			3	
TWG-Human Capital	Nov. 17, 2010	Rm 300, UP Computer Science Department, Diliman, QC	14	7	7	6		1	4	3
TWG-Infrastructure	Nov. 18, 2010	GLS Hall, 5F TelOf Annex Building, Quezon City	21	17	4	12		3	6	
TWG-Cyberservices	Nov. 18, 2010	CICT Building, Diliman, Quezon City	17	9	8	7			10	
TWG-e-Governance	Nov. 18, 2010	CICT Building, Diliman, Quezon City	17	8	9	14		2		1
Technical Working Group Meetings	Feb. 15, 2011	AVR GF CICT Building, Diliman, Quezon City	50	31	19	26		1	22	1
Focused Group Discussion										
Civil Society/Academe	Feb. 22, 2011	Seminar Room, 2F CICT Building, Diliman, QC	28	13	15					
Private Sector	Feb. 23, 2011	Seminar Room, 2F CICT Building, Diliman, QC	9	7	2					
Government Sector	Feb. 24, 2011	Seminar Room, 2F CICT Building, Diliman, QC	46	24	22					
Funding Agencies	Mar. 14, 2011	OSec Conference, CICT, Diliman, Quezon City	16	11	5					

Regional Workshop Consultations (excluding CICT Core Team Members)										
6th Knowledge Exchange Conference	Nov. 25, 2011	Cebu Parklane International, Cebu City	15	10	5	4	6	0	3	1
Visayas	Mar. 8, 2011	Diamond Suites, Cebu City	42	26	16	18	7	0	9	8
Mindanao	Mar. 10, 2011	The Royal Mandaya Hotel, Davao City	55	41	14	28	9	7	7	4
North Luzon	Mar. 15, 2011	El Cielito Inn, Cebu City	54	33	21	26	7	2	12	7
NCR & South Luzon	Mar. 22,	CICT, Diliman, Quezon	83	57	24	38	24	1	16	4
Workshops										
PDS Workshop	Nov. 4, 2010	Rm 305 Virata Hall, UP ISSI, Diliman, Quezon City	68	45	23	40		2	24	2
CICT Core Team Meetings										
Organizational Meeting of the CICT Core Group	Sep. 13, 2010	Seminar Room, 2F CICT Building, Diliman, QC	11	5	6					
2nd Meeting of the Core Team	Sep. 14, 2010	Seminar Room, 2F CICT Building, Diliman, QC	11	4	7					
3rd Meeting of the Core Team	Sep. 16, 2010	Seminar Room, 2F CICT Building, Diliman, QC	10	4	6					
CICT Core Team Meeting with CICT Chairman	Dec. 2, 2010	OSec Conference, CICT, Diliman, Quezon City	27	12	15					
CICT Core Team Meeting: Updates on Consultation & Online PDs	Mar. 17, 2011	Innotech Lab, 2F CICT Bldg., Diliman, QC	12	5	7					
CICT Core Team Meeting: Consolidation of Comments from Regional Consultations	Mar. 21, 2011	GLS Hall, 5F TelOf Annex Building, Quezon City	21	13	8					

1.1 Summary list of participants per sector and per event

EVENT TITLE	DATE/S	VENUE	NO. OF PAX			DISTRIBUTION				
						Public Sector		Private Sector	ICT Industry Association	Civil Society/Academe
			TOTAL	MALE	FEMALE	NGAs	LGUs			
CICT Core Team Meeting: Consolidation of Comments from Regional Consultations	Mar. 23, 2011	GLS Hall, 5F TelOf Annex Building, Quezon City	17 9	8						
CICT Core Meeting: Final Consolidation of Comments With CICT Chairman	Mar. 24, 2011	OSec Conference, C ICT, Diliman, Quezon City	15 9	6						
CICT Core Team Meeting: Presentation of Restructured Version of PDS	April 26, 2011	OSec Conference, C ICT, Diliman, Quezon City	11 5	6						
CICT Core Meeting: Visioning	Apr.28, 2011	OSec Conference, C ICT, Diliman, Quezon City	11 6	5						
Individual Meetings										
	Various Meetings and Interviews were conducted by the Lead Experts as part of the Consultation process for the PDS from October –December 2010.									

1.2 Summary list of participants per agency/organization

a. Technical Working Group Meetings

PUBLIC SECTOR	NO. OF ATTENDEES
Bureau of Internal Revenue	2
Commission on Information and Communications Technology (PPC, NTC, TelOf, NCC & PRC)	14
Civil Service Commission	1
Commission on Higher Education	1
Department of Budget and Management	1
Department of environment and Natural Resources	1
Department of Finance	2
Department of Health	1
Department of Labor and Employment	1
Department of Science and Technology	4
Department of the Interior and Local Government	1
Department of Trade and Industry	3
League of Municipalities of the Philippines	2
National Book Development Board	1
National Economic Development Authority	3
National Library of the Philippines	1
Technical Education and Skills Development Authority	1
PRIVATE SECTOR	NO. OF ATTENDEES
Digitel	1
Learn Express	1
Mozcom Inc.	1
SEAMEO-INNOTECH	1
Smart Communications	1
SofTrigger Interactive	2
ICT INDUSTRY ASSOCIATIONS	NO. OF ATTENDEES
Animation Council of the Philippines Inc. (ACPI)	2
Business Process Association of the Philippines (BPAP)	3
CIO Forum (CIOF)	2
Contact Center Association of the Philippines (CCAP)	2
Federation of International Cable Television Association of the Philippines (FICAP)	2
Foundation of Information Technology Education and (FIT-ED)	1
Game Developers Association of the Philippines (GDAP)	4

ICT INDUSTRY ASSOCIATIONS	NO. OF ATTENDEES
Healthcare Information Management Outsourcing Association of the Philippines/Medical transcription Industry Association of the Philippines (HIMOAP/MTIAP)	1
iCafe Pilipinas	1
Information Technology Association of the Philippines (ITAP)	2
Institute of Electronics Engineers of the Philippines (IECEP)	1
Integrated Telecommunication Suppliers Association of the Philippines (ITESAP)	2
National ICT Confederation of the Philippines (NICP)	1
Philippine Association of Private Telephone Companies (PAPTELCO)	1
Philippine Cable TV Association (PCTA)	3
Philippine CeC Network (PhilCeCNet)	1
Philippine Computer Society (PCS)	1
Philippine Electronics and Telecommunications Federation (PETEF)	5
Philippine National Standards Foundation (PHILNITS)	1
Philippine Society of Information Technology Educators, Inc. (PSITE)	1
Philippine Software Industry Association (PSIA)	1
CIVIL SOCIETY/ACADEME	NO. OF ATTENDEES
Gearing-up Internet Literacy and Access for Students (GILAS)	1
Philippine Normal University	1
UP DCS	1
UP NCPAG	1
UP school of Library	1

b. Focus Group Discussions

PUBLIC SECTOR	NO. OF ATTENDEES
Commission On Information And Communications Technology (Philpost, NTC, TelOf, NCC & PRC)	9
CIO Forum/Foundation	1
Commission On Audit	2
Commission On Higher Education	3
Department Of Energy	2
Department Of Environment And Natural Resources	1
Department Of Finance	2

PUBLIC SECTOR	NO. OF ATTENDEES
Department Of Health	1
Department Of Justice	4
Department Of Labor And Employment	1
Department Of National Defense	1
Department Of Public Works And Highways	1
Department Of Science And Technology	2
Department Of Social Welfare And Development	1
Department Of The Interior And Local Government	1
Department Of Tourism	1
Department Of Trade And Industry	1
Department Of Transportation And Communication	2
National Economic Development Authority	2
Philhealth	1
Technical Education And Skills Development Authority	3
National Economic Development Authority	3
National Library of the Philippines	1
Technical Education and Skills Development Authority	1
PRIVATE SECTOR/ICT INDUSTRY ASSOCIATIONS	NO. OF ATTENDEES
Federation Of International Cable Television Association Of The Philippines	2
Bayan Telecommunications	1
Information Technology Association Of The Philippines	1
Wallace Forum	1
Management Association Of The Philippines	1
Optel	1
Philippine Association Of Private Telephone Companies	1
Smart Communications	1
CIVIL SOCIETY/ACADEME	1
UP NCPAG	2
Association For Progressive Communication-Women's Networking Support Program	1
Ateneo De Manila University	1
End Child Prostitution ,Child Pornography And Trafficking Of Children For Sexual Purposes	2
Foundation For Media Alternatives	3
Gearing Up Internet Literacy And Access For Students	1
Institute Of Electronics Engineers Of The Philippines	1

DEVELOPMENT PARTNERS	NO. OF ATTENDEES
Asian Development Bank	2
American Chamber Of Commerce/Joint Foreign Chambers	1
French Embassy To The Philippines	2
Google	1
Japan International Cooperation Agency	1
Kitskoe	1
United States Agency For International Development	1
WorldBank	1
Philippine CeC Network (PhilCeCNet)	1
Philippine Computer Society (PCS)	1
Philippine Electronics and Telecommunications Federation (PETEF)	5
Philippine National Standards Foundation (PHILNITS)	1
Philippine Society of Information Technology Educators, Inc. (PSITE)	1
Philippine Software Industry Association (PSIA)	1

c. Regional Consultation

PUBLIC SECTOR	NO. OF ATTENDEES
CEBU (11/24/2010)	
Department of Education-RO 07	1
Department of Trade and Industry-RO 07	2
Commission on Higher Education- RO 07	1
VISAYAS (3/8/2011)	
Telecommunications Office VIII	2
Department of Trade and Industry-Bohol	2
Department of Trade and Industry-RO 08	1
National Economic Development Authority-RO 06	2
Department of Trade and Industry-RO 07	2
Department of Education VII	2
Telecommunications Office VI	4
Telecommunications Office -Cebu City	3

PUBLIC SECTOR	NO. OF ATTENDEES
MINDANAO (3/10/2011)	
Telecommunications Office-RO 10	2
Telecommunications Office-RO 11	3
Commission on Higher Education-RO 12	1
Armed Forces of the Philippines-RO 11	2
Department of Education-RO 10	1
Department of Education-RO 11	1
Department of Foreign Affairs-RO 11	1
Department of Public Works and Highways-RO 11	2
Department of Social Welfare and development-RO 11	1
Department of Trade and Industry-RO 11	1
National Economic Development Authority-RO 12	1
Technical Education and Skills Development Authority-CARAGA	1
Telecommunications Office-CARAGA	2
Telecommunications Office-RO 12	2
Department of Labor & Employment XI	1
MARINA XI	1
Department of Agrarian Reform XI	2
Department of Trade and Industry-RO 09	1
Telecommunications Office-RO 09	2
NORTH LUZON (3/15/2011)	
Commission on Higher Education- RO 01	1
Commission on Higher Education- RO 02	1
Department of Education- RO 01	1
Department of Education-CAR	1
Department of Education-RO 02	1
Department of Education-RO 03	1
Department of Tourism	1
Department of Trade and Industry-CAR	2
Department of Trade and Industry-RO 01	1
Department of Trade and Industry-RO 03	1
National Economic Development Authority-CAR	2
National Economic Development Authority-RO 01	1
National Telecommunications Commission-CAR	1
Philippine Economic Zone Authority-CAR	1
Technical Education and Skills Development Authority-CAR	1
Technical Education and Skills Development Authority-RO 01	1

PUBLIC SECTOR	NO. OF ATTENDEES
Technical Education and Skills Development Authority-RO 02	1
Telecommunications Office-CAR	2
Telecommunications Office-RO 01	3
Telecommunications Office-RO 02	2
NCR & SOUTH LUZON (3/22/2011)	
Commission on Information and Communications Technology	2
Telecommunications Office-RO 04	4
Telecommunications Office-RO 09	2
Telecommunications Office-NCR	3
Telecommunications Office-RO 05	1
Telecommunications Office-RO 07	1
Telecommunications Office-RO 08	2
Commission on Higher Education-RO 07	1
Department of Agriculture	1
Department of Foreign Affairs-RO 04A	1
Department of Public Works and Highways-RO 04A	1
Department of Public Works and Highways-RO 04B	2
Department of Science and Technology-RO 05	1
Department of Health	1
Department of Social Welfare and Development-RO 04B	1
Department of the Interior and Local Government-RO 04A	1
Department of the Interior and Local Government-RO 04B	1
Department of Trade and Industry-RO 04A	3
Department of Trade and Industry-Laguna	1
Department of Trade and Industry-CITEM	1
Department of Tourism-RO 04	1
National Economic Development Authority-RO 05	1
Technical Education and Skills Development Authority	1
National Defense College	2
Presidential Communications Operations Office	2
LOCAL GOVERNMENT UNITS	NO. OF ATTENDEES
CEBU (11/24/2010)	
LGU- Banga, Aklan	3
LGU Leyte	1
San Fernando Eskwela, Camarines Sur	2

PUBLIC SECTOR	NO. OF ATTENDEES
VISAYAS (3/8/2011)	
San Remigio	1
Cebu City Government	1
LGU Alegria, Cebu	1
Trinidad, Bohol	2
Dumaguete City	1
Suiquijor CEC	1
MINDANAO (3/10/2011)	
LGU Caraga Davao Oriental	1
LGU Sta. Maria, Davao Del Sur	1
LGU Hagonoy, Davao Del Sur	1
LGU Sarangani, Davao Del Sur	1
Autonomous Region Of Muslim Mindanao	4
LGU Digos, Davao Del Sur	1
NORTH LUZON (3/15/2011)	
LGU Benguet	2
LGU San Fabian	1
LGU Luna	2
Provincial Government Of Tarlac	1
Provincial Government Of Ilocos Norte	1
NCR & SOUTH LUZON (3/22/2011)	
Provincial Government Of Oriental Mindoro	2
Quezon City Government	4
Mandaluyong Government	1
Rizal Provincial Government	4
San Jose Del Monte, Bulacan	2
City Government Of Muntinlupa	2
Province Of Albay	1
Valenzuela City Government	3
Navotas City Government	2
Batangas Province	1
Provincial government Of Laguna	1
Nueva Ecija Provincial Government	1

PRIVATE SECTOR	NO. OF ATTENDEES
MINDANAO (3/10/2011)	
Nabtech	1
Dctech	2
Bayan Telecom	2
Eastmincomm	1
NORTH LUZON (3/15/2011)	
PLDT	1
Wavelinx Corp	2
NCR & SOUTH LUZON (3/22/2011)	
Link IT	1
ICT INDUSTRY ASSOCIATIONS	NO. OF ATTENDEES
CEBU (11/24/2010)	
Central Visayas Information Sharing Network Foundation	1
Cebu Educational Development Foundation For Information Technology	1
Cebu Software Development Industry Association, Inc.	1
VISAYAS (3/8/2011)	
Bohol ICT	2
Bacolod Negros Oriental Federation For IT	5
ICT Council -Dumaguete	1
Cebu Educational Development Foundation For Information Technology	1
MINDANAO (3/10/2011)	
Davao ICT Council	5
ICT Gensan	1
Technology Of Information And Communication In Koronadal	1
NORTH LUZON (3/15/2011)	
Ilocos Norte ICT Council	1
Nueva Ecija ICT Council	2
Subic Bay ICT Council	1
Malolos ICT Council	1
Vigan ICT Council	2
RMTU, Iba, Zambales	1
Metro Clark ICT Council	2
Subic Bay ICT Council	1
San Fernando ICT Council	1
NCR & SOUTH LUZON (3/22/2011)	
AICT	1

PUBLIC SECTOR	NO. OF ATTENDEES
Cavite ICT Council	4
Bicol ICT Council	4
Palayan ICT Council	1
Nueva Ecija ICT Council	3
Zamboanga City ICT Council	1
National ICT Confederation Of The Philippines (NICP)	1
Quezon City ICT Council	1
CIVIL SOCIETY/ACADEME	NO. OF ATTENDEES
CEBU (11/24/2010)	
Cebu Federation of Women	1
WESVARDE (Agricultural Consortium)	1
VISAYAS (3/8/2011)	
STI College-Zamboanga	2
PPTS	1
Benedicto College	1
Aegis People Support	1
Silliman University	2
Multiple Indicator Cluster Survey	1
MINDANAO (3/10/2011)	
STI Digos	1
University of Mindanao	2
san Pedro College	1
NORTH LUZON (3/15/2011)	
Benguet State University	2
Micro Asia College, Zambales	1
University of the Cordilleras	2
Saint Louis University	1
MMSU	1
Valenzuela City Government	3
Navotas City Government	2
Batangas Province	1
Provincial government Of Laguna	1
Nueva Ecija Provincial Government	1
NCR & SOUTH LUZON (3/22/2011)	
RTU	1
Isis International Manila	1
University of Rizal Systems	2

d. TWG Workshop-November 4, 2010

PUBLIC SECTOR	NO. OF ATTENDEES
Bureau of Internal Revenue	4
Commission on Information and Communications Technology (Philpost, NTC, TelOf, NCC & PRC)	17
Congressional Commission on Science and Technology and Engineering	1
Department of Budget and Management	2
Department of education	2
Department of Finance	1
Department of Labor and Employment	1
Department of Science and Technology	1
Department of the Interior and Local Government	1
Department of Trade and Industry	1
League of Municipalities of the Philippines	1
National Economic Development Authority	7
Technical Education and Skills Development Authority	1
PRIVATE SECTOR	1
SEAMEO-INNOTECH	1
British Council	1
ICT INDUSTRY ASSOCIATIONS	NO. OF ATTENDEES
Animation Council of the Philippines Inc. (ACPI)	1
Business Process Association of the Philippines (BPAP)	1
CIO Forum (CIOF)	2
Federation of International Cable Television Association of the Philippines (FICAP)	1
Foundation of Information Technology Education and (FIT-ED)	1
Game Developers Association of the Philippines (GDAP)	1
Healthcare Information Management Outsourcing Association of the Philippines/Medical transcription Industry Association of the Philippines (HIMOAP/ MTIAP)	1
iCafe Pilipinas	1
Information Technology Association of the Philippines (ITAP)	1
National ICT Confederation of the Philippines (NICP)	3
Philippine Association of Private Telephone Companies (PAPTELCO)	1
Philippine Computer Society (PCS)	5
Philippine Network foundation	1
Philippine National Standards Foundation (PHILNITS)	1

ICT INDUSTRY ASSOCIATIONS	NO. OF ATTENDEES
Philippine Society of Information Technology Educators, Inc. (PSITE)	1
Philippine Software Industry Association (PSIA)	2
CIVIL SOCIETY/ACADEME	NO. OF ATTENDEES
Foundation for Media Alternatives	1
Gearing Up Internet Literacy and Access for Students	1

ANNEX 2:
EXECUTIVE SUMMARY:
ASSESSMENT OF PHILIPPINE STRATEGIC ROADMAP FOR THE ICT SECTOR 2006-2010

I. Introduction

The Philippine Strategic Roadmap for the ICT Sector 2006-2010 is the only government blueprint for the ICT sector. It sets the direction and priorities for ICT development in the country, and provided a strategy for how the ICT sector would support the socio-economic development goals of the country, as embodied in the Philippine Development Plan 2011-2016. It designated the Commission on Information and Communications Technology (CICT), a government entity of the Executive Branch, which was established in 2004 through Executive Order 269 by President Gloria Macapagal-Arroyo, to lead in the implementation of the Roadmap

II. Strategic Roadmap 2006-2010 in Context

The Roadmap outlined the guiding principles for the use of ICT for socio-economic development in the Philippines. It also discussed strategic programs and initiatives for ICT related to: ensuring universal access to ICT; developing human capital; e-Governance to promote efficiency and transparency in government; strategic business development to enhance competitiveness in the global ICT market; and the legal and policy agenda for the Philippine ICT sector.

It spoke of a holistic approach to ICT development in the Philippines, and a commitment to the "goal of a people-centered, inclusive and development-oriented Information Society that promotes sustainable development and improves the quality of life for all."

Government's primary role under the Roadmap was to level the playing field and allow "the private sector to lead," stepping in only when market forces could not "guarantee the full development of an inclusive Information Society."

Notwithstanding the overarching and laudable principles and goals articulated, it will be noted that the history of the preparation of the Strategic Roadmap incorporates a decided bias for development of the e-services sector in the Philippines. The Strategic Roadmap was focused primarily on and was intended to boost the Philippines' aspirations of becoming the e-services hub in Asia. The year 2005 was a period when ICT-enabled industries – particularly contact centers, animation, software development, medical transcription and business process outsourcing – were on the rise, and were identified, correctly, as niches where the Philippines enjoyed distinct competitive advantages.

The Strategic Roadmap 2006-2010 set targets and projects, most of which were designed to enhance the standing of the country as a major e-services hub, including workforce development and ICT competency standards, workforce mobilization programs, marketing the Philippine brand, and making the Philippines the country of choice for investors. Indeed, even the proposal to create a new Department of ICT at the time was often justified as critical to the extent that such a Department's existence would reassure potential investors of government's commitment to the sector.

It is important to recognize this point because it explains in part the targets set by the Roadmap, as well as the successes, shortfalls and challenges that the CICT faced as it implemented the Roadmap over the past five years.

III. An Overall Picture of Success and Accomplishment

By and large, the success of the CICT on numerous fronts in terms of implementing and achieving targets and goals set by the Strategic Roadmap is undeniable. These include the following:

- The Philippine CyberCorridor was launched in 2005 as an ICT belt stretching over 600 miles from Baguio City to Zamboanga, and designed to provide a variety of cyberservices at par with global standards. CICT support was critical to the growth and strengthening of the Business Processing Association of the Philippines (BPAP), now the leading private sector-led eServices Industry association.

- In terms of jobs and revenue targets, the Roadmap projected that "by 2010, it is expected that 1,082,800 workers will be employed in the Cyberservices sector, with total revenues projected to reach US$12.793B." The target, overly ambitious to begin with, was not met. Nonetheless, the number of jobs expected in 2010 (557,127) is still more than five times the number in 2004 (100,000).

  More impressively, the value of revenues expected in 2010 ($9.1B) rose sevenfold from 2004 ($1.3B), reflecting the progress in the sector as the Philippines rose up the value chain, resulting in more revenue generated per worker ($13k per worker in 2004 vs. $16.33k per worker in 2010).

- The iSchools Project supports the efforts of the Philippine Government and the Department of Education to incorporate ICT in education in public high schools, equip public high school teachers and students with ICT literacy skills, and provide them access to relevant digital content and applications in education that they can use to enhance effective learning. CICT developed the iSchool Web Board (now called Camp Blog), an innovative platform that enables teachers to build and share self-learning materials online. The iSchools Project received the Digital Inclusion Award at the FutureGov Government Technology Awards in 2009.

- Through the Digital Media Arts Program, CICT developed learning materials on health, culture and arts with support from the National Commission on Culture and Arts (NCCA), and state colleges and universities. This included, Open Content in Education which converted materials into interactive multimedia content, and the development of applications for use by schools; Creative Content Development with the NCCA; and working with the Technical Education and Skills Development Authority (TESDA) to develop vocational technology related materials.

- Under the eSkwela Program, Community e-Learning Centers for out-of-school youth were established to provide them with alternative educational opportunities, and particularly to achieve high school equivalency status. Its successes were recognized in the UNESCO ICT in Education Innovation Awards 2008.

- In 2008 and 2009, the Near Hire Program of TESDA and BPAP, supported by CICT saw 65,644 near hires trained of which 46,002 were eventually hired.

- CICT managed the e-Government Fund and supported the development of 57 projects from 51 agencies totalling PhP6.4 Billion.

- The eLGU Program now benefits over 300 local government units and provides them with 3 applications (real property, business permit and licensing, and treasury and accounting) that can be used in their operations for increased revenues and better public service.

- Over 1,200 Community e-Centers have been established to date. The success of the CeC Program was duly recognized with the selection of the Philippines as the headquarters of Telecentre.org for the next five years (up to 2015). Telecentre.org is a worldwide network of people and organizations committed to increasing the social and economic impact of tens of thousands of grassroots telecenters.

- Finally, while not directly attributable to CICT, other key numbers point to the progress achieved over the past years. The growth of mobile from 6.5M subscribers in 2000 to 68.1M in 2008 and the accompanying recognition of the Philippines as the texting capital of the world are well documented. The number of Internet users increased more than tenfold from 2M in 2000 to 24M in 2009. And, in a development that surely benefited millions of Filipinos working abroad, the NTC issued rules on VoIP, resulting in a dramatic reduction in the cost of international long distance from $0.4/min. to $0.03 per minute.

IV. Recurring Themes: Challenges and Weaknesses

While the overall picture painted in the previous section is one of undeniable accomplishment, it is important to also recognize the shortcomings and targets that were not met, and those that could have been better implemented.

This recognition is made not so much to point failure or fingers, but to identify lessons learned and issues to be considered, as the CICT moves forward in the new administration, and with the update of the now-ending Strategic Roadmap.

1. Access to and Dissemination of Public Information.

The Strategic Roadmap called for the creation of an Industry Portal to provide a virtual business matching service, as well as an e-Government Portal to serve as the primary gateway for citizens and businesses to interact effectively with government.

The Industry Portal was not established, although to be fair, the Strategic Roadmap was silent on which, whether government or private sector, would ultimately be expected to set it up. Regardless, the result is that there is no single site that would-be investors can go to for data and other information that they would need to make key investment decisions (e.g., comparative lease, electricity rates and other critical investor-concern differences between LGUs).

On the other side, the e-Government Portal was launched as eSerbisyo (www.eserbisyo.gov.ph) on June 27, 2008. As a start, it is a useful site that houses in one place links to key government services such as passport renewals and procurement of birth certificates.
There are two major problems, however, that adversely impact access to eSerbisyo. The first is reliability. eSerbisyo is hosted in-house within CICT, and is often down and inaccessible. The second major problem is awareness; eSerbisyo needs to be marketed well (after the reliability issue has been addressed) to ensure that people actually know about and use it.

2. Measurement, Monitoring and Effective Use of Data and Information.

The flipside of providing access to and disseminating information is tracking and being able to actually use gathered data to help the government make more informed decisions and develop evidence-based policies, and be more effective and efficient in the delivery of its services.

It is in this area that the CIC, both for itself, and in the implementation of the Strategic Plan, could and will institutionalize and put effective systems in place. This will allow it to monitor and understand more fully information critical to its role as the leading government agency for ICT, including continuing data on the country's overall ICT development, implementation of strategic roadmap-specific programs, governance, and universal access.

3. Turf Issues and the CICT in relation to Other Agencies of Government

A good number of targets and activities identified by the Strategic Roadmap 2006-2011 were not met, or, were they pursued, did not have the desired impact because CICT does not have the political weight to impose its will on other agencies and departments critical to these efforts.

To give examples:

a. The Government Information Systems Plan (GISP) is supposed to serve as the framework and guide for the computerization of key frontline and common services of government.

Much of the success in this area obtains from gains made in frontline services, i.e., government services that are in most demand for and/or use by the citizenry such as the National Statistics Office, the Department of Foreign Affairs, the Bureau of Internal Revenue, Land Transportation Commission, Securities and Exchange Commission, etc.

An emerging interoperability problem, however, appears to be arising as various agencies have set up their own sophisticated systems without concern or regard for interaction or sharing of data with others. As a result, initiatives such as the multi-purpose ID system (which would link key citizen-centric agencies such as SSS, GSIS, Pag-Ibig and Philhealth) have met with great delay.

GISP plans in other areas such as LGU services, common services (e.g., human resources, accounting) and sector-specific services (e.g., agriculture, justice, tourism, etc.) remain similarly problematic, if not unaddressed, particularly because they involve coordination and cooperation between various local governments and/or agencies which, among other things, may not necessarily recognize the CICT's authority in these efforts.

b. For a number of initiatives overseen by the CICT, close relationships and cooperation with key departments are critical to ensure success and effectiveness.

Thus, the e-Government Fund must be implemented, and more importantly, reformed to ensure transparency and meaningful evaluation, in close coordination with the Department of Budget and Management (DBM) which would have the weight and teeth to institutionalize check and balance mechanisms, as well as to require more substantive monitoring and evaluation processes.

c. Sometimes, the problem is not even how but who? CICT does not have to lead every ICT-related initiative, but if not CICT, then who?

To illustrate, the Roadmap calls support for the Education sector's efforts to incorporate the use of ICT in education at all levels. The CICT was able to assist the Department of Education in the formulation of the National framework Plan for ICTs, but only for Basic Education (2005-2010).

The ideal, needless to say, would have been the development of an ICT in Education Masterplan that would cover all levels, from primary to tertiary. Unfortunately, beyond basic education, it remains unclear who would be in charge as there are at least two agencies to contend with – the Technical Education and Skills Development Authority (TESDA) and the Commission on Higher Education (CHED).

d. Still on education, note that the CICT has come up with ICT competency standards, with corresponding policy advisories.

These standards, however, are merely advisory or recommendatory, and need to be strengthened. The ideal outcome would be for the Civil Service Commission and DBM to incorporate the standards in the qualification requirements of concerned positions, and then use the same to determine salary grades.

e. The Roadmap also called for the creation of a Chief Information Officers (CIO) Council which would be composed of CIOs from every agency of government, and guided by the CICT to improve data sharing and network interoperability. Unfortunately, the effort never got any traction as the CICT did not have the political standing to get every agency of government to even appoint CIOs, much less gather them all together under the leadership of CICT.

f. In theory and on paper, the National Telecommunications Commission (NTC) is supposed to receive policy guidance from the CICT. In practice, this has never been the case. Much of the difficulties lie with the nature of the NTC as a regulator without political autonomy or fiscal independence, thus making it highly susceptible to changes in political fortunes and to regulatory capture. Regardless, the relationship between CICT and NTC needs to be clarified if the goals desired under the present and future strategic plans, particularly with respect to the creation of a level and enabling legal environment, are to be achieved.

4. Public-Private Partnerships

The development of a Government Communication Network which would connect all government agencies in a common shareable government intranet was seriously hampered by the ZTE Broadband controversy. This is probably just as well as such could be better provided for by the private sector. Government's role would be to act as a model broadband user, not by creating yet another network to compete with or bypass the private sector, but to use existing private sector facilities and thus "provide a major stimulus to the industry for further network and market expansion."

In terms of bridging the digital divide, the CeC Program will also benefit greatly from increased public-private partnerships, which would allow it to concentrate public funds and resources more fully to connect, or else to lower risk and encourage the private sector to expand, into unserved, largely rural areas.

Just how far the government, and particularly, CICT, is willing to go in terms of private sector participation and partnerships, however, is not clear. For instance, take the decision to not to

outsource eSerbisyo but to host it in-house. There is little doubt that the private sector could have better ensured 24x7 reliability for this e-Government portal, but bureaucratic resistance appears to have stymied such a course of action.

The Telecommunications Office (TELOF) is another major challenge related to this issue of public-private partnerships. Under Republic Act 7925, TELOF was supposed to have been privatized, but those plans have stalled from lack of private sector interest. It is not clear how such interest can be ignited as TELOF does not have the capital to upgrade its facilities. Nonetheless, it is well worth noting that the value of the land that TELOF owns and upon which its facilities stand – quite a few of which are located on prime city locations – is likely to be massive, and may represent its best chance at privatization.

Finally, private sector participation in the selection process for projects to be funded by the e-Government Fund needs to be institutionalized to encourage, if not ensure, transparency. A good example in this respect would be the Department of National Defense's practice of including representatives from the Catholic Bishops Conference of the Philippines as witnesses in all involving military and defense-related bidding and procurement processes.

5. Policymaking and Advocacy

If there is any function or role that the CICT can and will play, it is to be a strong and leading advocate for policy reform to promote greater access and use of ICT for various socio-economic, developmental and governance purposes. The resources and staffing of CICT's Policy Group (Note: there are only seven personnel and no lawyers in the Group), as well as the previously identified weakness in data gathering and use, does not reflect a serious appreciation for, or capacity to play such a role.

While there is no way to tell, a CICT that had been equipped and capable of mounting a stronger, more informed and numbers-based advocacy campaign for its pet issues might have tipped the scales for two bills that very nearly made it through the legislative mill – the DICT Bill and the Freedom of Information Act.

V. Moving Forward: Recommendations for the Strategic Roadmap Update

RECOMMENDATION 1: DUE PROCESS AND FULL STAKEHOLDER OWNERSHIP

An initial cursory review of international best practices (e.g., Digital Britain) shows that developing a national ICT strategy requires a national dialogue and extensive stakeholder consultation. Major line agencies and departments (such as budget, finance, education, economic planning, among others) need to be involved to develop a credible document. It cannot be developed in isolation, but instead requires a consultative process with the citizens, the private sector, NGOs, and other interested stakeholders. Internationally, there is an increased focus on the due process of how national ICT or digital strategies are developed, so that these can be seen as credible, inclusive and legitimate.

Time is therefore a key investment, and the process can take anywhere from 6 to 12 months. It is an investment worth taking as the benefits – increased likelihood of success, greater public awareness and perceptions of legitimacy, broader support from the public and private stakeholders, and increased relevance of programs and objectives – will far outweigh the costs involved with an extended process of consultation and participation.

The process of ensuring full stakeholder participation, which must be present from the very beginning and at all steps in the whole effort, could begin with a detailed assessment, and review of best practices on the crafting of strategic roadmaps, as a starting point for broad support for the actual process of crafting the new roadmap itself.

The primary objective, to emphasize, would be to come up with a new Strategic Roadmap that all stakeholders, and not just the CICT, can truly claim as their own.

RECOMMENDATION 2: STRATEGIC ROADMAP FOCUS

If, as mentioned at the start, the focus of the current Roadmap was centered on a desire to make the Philippines the e-services hub of Asia, what will the new Roadmap prioritize?

There are, of course, a multitude of goals and objectives that are important: from continuing and building upon the successes of the past five years in e-services, to promoting the use of ICT for better governance, to bridging the digital divide and ensuring universal access for all. It is important to emphasize that a focus on a particular area does not preclude activities in other areas. Indeed, these various goals are interrelated and complementary.

Thus, the previous Roadmap centered on developing the country into an e-services hub – by promoting the Cyber Corridor; implementing workforce development programs to address the jobs-skills mismatch; pushing for e-Government initiatives to streamline business registration and permitting processes; marketing the Philippine brand and moving to strengthen identified e-service niches like animation, business process outsourcing, contact centers and medical transcription; and advocating for legal and regulatory reforms needed "to promote the country as a global knowledge player and world-class ICT services provider." This focus, however, did not prevent the CICT from pushing other initiatives to address the digital divide (principally through the Community e-Center Program) and promoting e-Governance (through various vehicles such as GISP and the e-Government Fund), among others.

But, a deliberate focus or theme is important - and ultimately necessary - because (a) we must recognize the economic reality of scarce resources for which choices have to be made; and (b) it strengthens the message and direction that government, ideally in full partnership with or with sincere validation by private sector and civil society, is taking.

Recommended Main Area of Focus: ICT FOR GOVERNANCE

The new Roadmap will be crafted under the auspices of a new administration that has been elected on a platform of better governance and transparency. Given the record mandate for change of the new government, a new Strategic Roadmap that focuses on e-Governance, or on promoting the use of and access to ICT as a tool for reducing corruption, streamlining bureaucratic processes and delivering better public services, will resonate both with the public and the newly elected leaders. It will also provide meaningful opportunities for significant private sector participation.

The Roadmap can build and deepen the public's growing trust and belief in ICT for governance, to help provide key government services in a more timely, efficient and transparent manner. e-Governance can extend the benefits of ICT to local governments, streamline business registration processes and encourage investment, transform education and help make the country more competitive.

Complementary Areas of Focus: CYBERSERVICES AND UNIVERSAL ACCESS

Equally important, ICT for governance will also complement and build on the successes and current initiatives of the CICT to promote cyberservices and to bridge the digital divide. As mentioned, a focus on e-Governance does not preclude the pursuit of other objectives, particularly those that build on the success of the past five years. These would include, but are not necessarily limited to the following:

- Government support must continue in terms of marketing and increasing the value of the Philippine brand, for instance by continuing to support private sector companies to allow them to participate in international trade fairs. Another important area is enabling regulation for ICT businesses.

- Support and leadership participation in Telecentre.org, which will have its headquarters in the Philippines, at least through 2015, and efforts to ensure universal access to ICT.

- Bridging the digital divide calls for broadband infrastructure roll-out, especially in the rural areas, as a complement to the Community e-Center Program.

- Workforce Mobilization and the Near Hire Training Program of TESDA and BPAP, among others, need to be expanded. The same is true with eSkwela and iSchools.

RECOMMENDATION 3: CLEARLY DELINEATED ROLES AND RESPONSIBILITIES AND SYSTEMS FOR MONITORING AND EVALUATION

One key area in the new strategic roadmap that can greatly be improved on is a clear specification of duties and responsibilities among the various stakeholders. Who and what agency or entity shall be held responsible for the implementation and delivery of identified programs and results? How will the objectives and goals be pursued? Where will funding come from, and how will initiatives be financed?

In the context of a national strategic roadmap, the nature and use of ICT itself, whether for e-Governance or for any other purpose, requires a multi-sector, cross-government strategy, and for this reason, the creation of an inter-agency mechanism that facilitates cooperation and coordination, with full private sector support and participation, and under the leadership of a clearly mandated agency is necessary.

Thus, beyond the CICT (and the private sector and civil society), it is absolutely important that the other key government agencies that are critical to the implementation of e-Governance – including particularly the Department of Budget and Management, NEDA, Finance, Local Government and key sector-based departments like Education, Health and Tourism, among many others – are identified and brought into the fold, with roles, points of accountability and responsibilities clearly spelled out. They have to be actively involved as full partners, from the very beginning and at all stages of the preparation of the new Roadmap.

It is guaranteed the CICT itself as an institution will be confronted with the challenge of establishing its role as the leader or, more accurately, the facilitator for the development and implementation of the Roadmap. Given the failure of the past legislature to pass the law creating a new Department of Information and Communications Technology:

(a) What can the CICT achieve and reasonably strive for as a Commission, and to what degree does it enjoy support from Malacanang? In what ways can its hand be strengthened?

(b) What is its overall role, both as the agency tasked to push the government's ICT objectives, and as an agency that is only one among many other more "powerful" departments and agencies?

And, within the CICT, its different Groups will each have roles consistent with the goals and objectives of the Roadmap. For illustrative purposes only, assuming e-Governance as the main thrust, each group could take on the following roles which would support, complement and ensure the successful implementation of the new Roadmap:

- The e-Governance Group is the lead agency for ICT in government. It must take the lead in the update and implementation of the GISP, and at a certain point, oversee the pursuit of a truly ambitious inter-agency e-Government project – both to cement CICT's role and to demonstrate again in a major way the potential of ICT for governance. One possible project would be to fully implement ongoing efforts to connect key frontline agencies such as GSIS, Philhealth, Pagibig, SSS and the National Statistics Office which would facilitate many of the transactions that are most relevant to citizens and businesses.

  Moreover – and it is difficult to understate the importance of this duty – it must ensure the strengthening of monitoring and evaluation of the e-Government Fund, possibly by an independent external auditor approved by CICT and DBM.

- The Infrastructure Group could work on establishing a Government Communication Network – as called for in the current Roadmap – which would connect all government agencies in a common shareable government intranet. The government does not and will not have to create such a network on its own, but will work with the private sector which, more than government, has the resources and expertise to establish such a facility.
- The Cyberservices Group to continue supporting the private sector in marketing and increasing the value of the Philippine brand, and in addition can work to identify and package opportunities for private sector participation in e-Government projects. Moreover, it can market the e-Government thrust to potential investors to highlight government's commitment to streamlining and making it easy for them to set-up businesses in the country. It must embody and be the face of a serious commitment by government to outsource goods and services as much as possible.

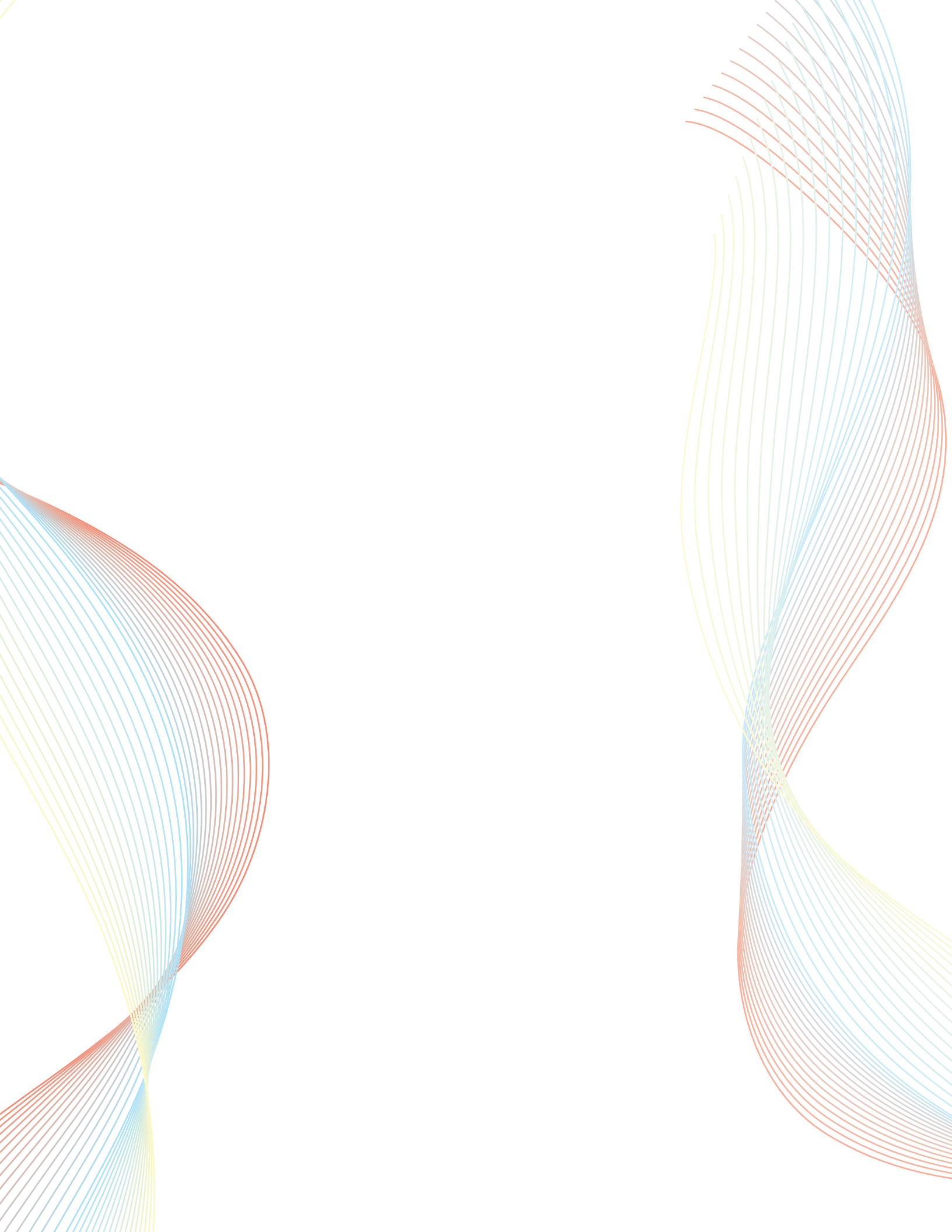
- The Human Capital Development Group's role will be to continue with the development of competency standards, and training of Government IT workers.

- The Policy Group must undergo a serious change. Its capacity to research, gather and use meaningful data must be built up, as well as its capacity to formulate policies. It must be equipped to play an advocacy role – both to legislators and policymakers, as well as to the public – and must systematically and effectively build support for the increased use of and access to ICT in general, and the deliberate funding and implementation of e-Government initiatives in particular.

As a final note and to re-emphasize, the new ICT Strategic Roadmap will also contain relevant metrics at the outset. What will be measured and tracked? How will the Roadmap be measured to assess its success overall, and the progress and achievements or deficiencies as it is being implemented? Who will do the measuring, how will the data be interpreted, how will the findings be validated and, most importantly, how will they be shared to those who will have the most use and interest in them – not least of which will be the general public?

It is only by providing such mechanisms for monitoring and evaluation that those who are responsible for implementing the Roadmap and its various components may truly be held accountable. In this manner then, even the implementation of the Roadmap itself will be a reflection of the very kind of better governance that it is supposed to help bring to fruition.

ANNEX 3:
CURRENT STATUS, OPPORTUNITIES & CHALLENGES



1. TRANSPARENT GOVERNMENT AND EFFICIENT SOCIAL SERVICE DELIVERY (E-GOVERNMENT AND E-GOVERNANCE)

We started early paving the way for e-Government

Succeeding initiatives have been undertaken towards the realization of e-Government in the country. These include:

- Executive Order 190 s. 1994 (and amended by EO 469 in 1998) – Adopting the National Information Technology Plan 2000 (NITP2000) and establishing the National Information Technology Council (NITC) as the central policy body on ICT matters in the country. The cabinet-level council, co-chaired by the Executive Secretary and the NEDA Director-General, was also tasked with coordinating the NITP2000's implementation. For the first time, government developed a comprehensive plan and mapped out strategies for the development of the ICT industry as well as the adoption of ICT in the public sector. As a supporting structure, EO 190 also mandated the designation of Information Systems Planners in each government agency to take charge of formulating the agency IT strategic plan. This was a move toward effecting the alignment of the agency programs with the GISP and the PDP. The NITC was later merged with the e-Commerce Promotion Council into what is now the Information Technology & e-Commerce Council under EO 264.
- In October 1997, government approved IT21, a document outlining the country's action agenda for ICT for the 21st century, thereby updating NITP2000. The plan promotes best practice ICT in governance and encourages the outsourcing of government ICT projects to stimulate industry growth.
- Administrative Order No. 332, issued in November 1997, is a directive for government agencies to connect to the Internet to spawn the development of RPWEB, providing the needed impetus for the realization of the Philippine Information Infrastructure. RPWEB was to serve as the country's Intranet to achieve interconnectivity and greater efficiencies in electronic information and data interchange among government, academe, and the industry and business sectors. The Philippine Information Infrastructure (PII) framework required the provision of telecommunications systems and facility services, value-added network and communications services, and information or content management and applications services.
- Republic Act 8792 – Electronic Commerce Act of 2000. The Law defines the Philippine government's policies on electronic transactions and provides the legal framework for the country's participation in e-commerce. Among its salient features is the provision for recognizing electronic evidence as admissible in court.
- Executive Order 265 s. 2000 adopted the Government Information Systems Plan of 2000 as framework and guide for the computerization of key frontline and common services and operations of the government to enhance overall governance and improve the efficiency and effectiveness of the bureaucracy. The ITECC was tasked to issue guidelines as may be necessary to implement the GISP.
- General Appropriations Act of 2004 to 2010 – Establishment of the e-Government Fund as an alternative funding source for mission-critical, high-impact, and cross-agency ICT projects.

Objectives and programs remained much the same

Against this backdrop, the CICT published The Philippine ICT Roadmap of 2006. In the area of e-Government, the Roadmap restated the objective of using ICT to promote efficiency and transparency in government. The key programs identified in the e-Government agenda were the continuation of the e-Government Fund, development of common national government agency applications, the institutionalization of the CIO position in government agencies and constituting the CIO Council, Enhanced ICT Training for Government and the updating of the GISP.

… and some progress has been made

There has been some progress made in relation to the agenda laid down by the ICT Roadmap of 2006. In line with its declared initiatives related to e-Governance, the CICT has put in place some key measures aimed at facilitating the realization of e-Government.

An e-Government Funding mechanism and financing is in place

To support its commitment to enhance the delivery of government services, the Philippine government, instituted an e-Government Fund (EGF) amounting to almost P10B in 2004. This amount was earmarked to finance priority e-Government projects relating to the delivery of frontline services. The move represented one of the most significant milestones towards moving a strategic e-Government agenda forward.
Representing 0.8% of the country's GDP in 2004, this amount was comparable with IT spend levels of countries considered as leading in e-Government development at the time.

Table A1
Government Spending on ICT: Select Countries

Country	Spending on e-Government (% of GDP)
UK	1.0 (one per cent)
Singapore	0.8 (eight-tenth of one per cent)
US	0.5 (one-half of one per cent)
Taiwan	0.4 (four-tenth of one per cent)

Source: imicopoulus 2004

Some notable projects but overall utilization rate is low

Among the most notable of EGF funded projects are

a) LGU Community e-Center (LGU CEC) Project Component by the Commission on Information and Communications Technology (CICT);
b) E-Budget Implementation and Business Continuity Project by the Department of Budget and Management (DBM);
c) Integrated Drug Test Operations and Management Information System (iDTOMIS) Project by the Department of Health (DOH); and
d) Philippine e-Library Project by the National Library of the Philippines (NLP), among others.

The largest allocation is the ICT for Basic Education (ICT4BE) Program by the CICT Technology-Human Capital Development Group (CICT-HCDG) which is part of IT capacity building thrust.

Overall, 49% of assigned funds are still available. The status of the EGF is shown in the table below:

Table A2
Status of EGF as of December 2009

Percentage of funds not used yet	49%
Approved projects for 2004-2007	42
Cost of approved projects	PhP 5.1B
Actual disbursement	PhP 3.1B (61% of total approved project costs)
Completed projects	8
Ongoing projects	32
Not implemented projects	2

Source: Annex 1-A. Status Report of e-Government Projects

Presently, there are twenty-two (22) projects submitted for funding by the e-Government Fund for the year 2010 and 2011.

Limited usage so far can be attributed to practical issues but also lack of government leadership and coherent framework

The low absorption of the e-Government Fund is attributed to a number of factors covering various areas in the project life cycle, i.e., from project preparation, procurement and project management. According to a study presented by the CICT in 2007[1] , the major causes of failure or delays in EGF-funded projects are difficulty in procurement, specifically failure in bidding; change in project sponsorship; and change in reporting requirements, among others.

To address these issues, the CICT has revised the rules for availment of the fund and has issued a new set of guidelines for the management of the e-Government Fund. The new guidelines incorporate best practices in IT project management and set aside an allocation for technical assistance grants aimed at addressing the causes of project failure related to the factors earlier mentioned.

However, more problematic for the development of priority front-end applications is the lack of a coherent strategy and architecture that will be defined. The groundlaying activities of database build-up, process re-engineering for increased efficiency and interoperability will be undertaken in a coordinated manner.

There is a gap of leadership at a higher level than the CICT. In most countries, e-Government is implemented by either a very powerful ministry or at President-level or a council of ministers.

[1] "Procurement Issues on the Use of the E-Government Fund" – presented by CICT Commissioner A.T.M. Diaz de Rivera, July 2007

A Government Information Systems Plan (GISP) exists

The Philippines has a Government Information Systems Plan (GISP), developed in 2000, in support of the country's development goals. Its key purpose is to ensure that government harnesses the full potentials of ICT to promote wider public access to information, and faster and more efficient delivery of government services to the public. The main objectives are to foster a globally competitive economy; accelerated development of human resources and eradication of poverty; more equitable spatial distribution of economic development, economic activity and population; sustainable development of natural resources; improved peace and order and more effective governance.

...but its implementation is limited

Under the GISP, all government agencies are required to develop an Information Systems Strategic Plan (ISSP) to be endorsed by CICT. A review in May 2009 revealed that only 44 government agencies have a current and endorsed ISSP, while 149 government agencies have outdated ISSPs, and 70 government agencies submitted an ISSP but these have not been approved by the NCC.

Current web-page capabilities of NGAs and e-Government services are evolving

While the development of common applications for National Government Agencies (NGAs) was provided for in the GISP of 2000, this is an area that has not seen substantial progress. There has also been little progress in the development of end-to-end applications that cut across agency boundaries, despite the declared policy of the EGF guidelines and the prioritization of inter-agency applications. However, evidence of this could be gleaned from the latest status reports on e-Government readiness from the CICT.

As of September 2010, 304 of 324 national government agencies (NGAs), or 93.8 percent, have Web presence.

Table A3
Stages of e-Government evolution & status of GOP online (Sept 2010)

Stages	Description	Classification of 304 NGAs with Web Presence
Emerging presence	A government's online presence is mainly comprised of official websites	15.46%
Enhanced presence	Governments provides more information on public policy and governance	49.34%
Interactive presence	Governments deliver online services such as downloadable forms	30.59%
Transactional presence	Governments begin to transform themselves by introducing two-way interaction	4.61%
Networked presence	Governments transform themselves into a connected entity that responds to the needs of its citizens by developing an integrated back office infrastructure	0%

Source: From UN e-Government surveys (e.g., Global Survey 2005) that provide an eReadiness index for e-Government. It is a composite index comprising the, the telecommunication infrastructure index, the human capital index and the eParticipation index. The above part is called the web measurement index.

…but a government Intranet and communication network is still missing

While individual departments and NGAs have their communications network, there is no single Intranet and communications network for the entire government, including connecting the various regional, provincial and local government units (LGUs).

There are no official Chief Information Officer positions in government…

The establishment of a CIO Council as envisioned in the ICT Roadmap 2006 has not been realized. A major hindrance to forming the Council is the fact that the position of Chief Information Officer is not defined in the current plantilla of positions of the government as defined by the Civil Service Commission. This, in turn, could be an indication of the inadequate appreciation of the role of the CIO in a government organization, and much less, the role of a CIO for the whole of government.

…but a strong CIO organization that can assist to create CIOs fast

However, an organization called The Chief Information Officers Forum, Inc. (CIOF) exists. This is a non-stock, non-profit organization incorporated by CIOs of different government departments and agencies with the Securities and Exchange Commission (SEC). As compared to the CIO Council, the CIOF has the following objectives, a) to serve as an advocacy and consensus-building group to address key IT policy issues and concerns; b) to provide the venue for technology solutions and information exchange, and resource and experience sharing among members; and c) to promote wider and more active government-private sector linkages and networking.

The CIO Forum has been active in supporting various policy initiatives and activities of the CICT. On various occasions, the CICT has asked the organization to provide technical expertise in the pursuance of its activities. An example of this is the assignment of some CIOF officers to the Technical Advisory Council for the COMELEC computerization project covering the national elections of 2010. Another example is the active involvement of the CIOF in advocating the bill creating the Department of Information & Communications Technology, which includes the creation of the position of the government CIO, among others.

In conclusion, the challenges that need to be addressed are

1. Leadership – The development of a transparent and citizen-centric government – using ICT where appropriate – needs to be spearheaded at the highest level and involve government leadership in order to foster commitment to e-Government and e-Governance development goals.

2. Institutional Framework – The creation of a cabinet-level council is critical to obtaining the necessary commitment and level of coordination in pursuing a strategic roadmap for e-Government development. This council would be responsible for a coherent plan (possibly updating the GISP or formulating a new plan) and its implementing guidelines, including roles and accountabilities for implementation.

3. On e-Government Applications – e-Government development is not proceeding in accordance with a defined work program, again since the GISP implementing guidelines have not been drafted. Current indicators show underdeveloped web presence and the e-Government Fund is exhibiting a low rate of absorption. There is also concern for the absence of interoperability framework as e-Government projects are implemented over tim

4. Infrastructure Facilities – The government requires an Intranet and broadband communications as well as facilities for e-Government development, like a data center, and ability of government ICT systems to connect and/or access each other's systems where appropriate.

5. Human Capacity Issues – Improvements are necessary in the area of ICT-related competency standards, technical and management skills and possibly compensation packages.

6. Computerization in LGUs – Planning and sufficient funding for maintaining and upgrading IT resources.

2. INTERNET OPPORTUNITIES FOR ALL PEOPLE (BROADBAND INFRASTRUCTURE & DIGITAL INCLUSION)

Universal service for telephony has been almost achieved. Universal access and service for broadband is the next step

- The Philippines has a mobile subscriber penetration rate of 100% as of 2009. One can reasonably assume that nearly all Filipinos would have access to a cell phone, either because they own one, or a family member or friend owns one that they could borrow. In this limited sense, Universal Service for telephony is nearly achieved.
- However, there remain some coverage gaps. For example, in preparations for the 2010 national elections, out of 1,634 cities and municipalities, 86 or 5.26% were determined to have not been covered by any mobile network. And in only 76% of polling precincts the mobile networks had sufficient data transmission capacity to transmit the election data using mobile phones.
- Therefore, even as much success has been achieved in mobile telephony, some measures are still needed to address the remaining pockets of unserved people who undoubtedly exist.

10% of mobile subscribers have access to broadband

- The bigger challenge however is to achieve the same level of service and success for broadband, whether by means of wired digital subscriber lines (DSL) or wireless broadband access, throughout the entire population of the Philippines. As of December 2009, NTC data indicates that there are around 3.6 million fixed broadband subscribers, or roughly 4% of the estimated 90 million population, while there are 10% of mobile subscribers with access to broadband.

And broadband coverage is low

- Less than 15% of the nation's geographic area is covered with broadband access technology, which leaves virtually the whole of rural Philippines without any access to the benefits of broadband Internet service. Even some urban and semi-urban areas outside of Metro Manila probably do not have adequate broadband access.
- It is important to recognize that even though half of the cities and municipalities can be considered covered by the presence of broadband service, and that most of the country's urbanized population inhabit these centers, the geographic reach of these services is limited. In some cases, the broadband services may be limited to certain areas within the urban boundaries because of the range limitations of 3G wireless base stations.
- As of 2009, 26 provinces do not have any 3G/HSPA sites at all, while 54 provinces have at least one operator providing mobile broadband in a limited number of locations within the province.
- Also, more than a fifth of provinces in the country do not have a fibre backbone network, though they do have a lower capacity micro-wave network. These areas tend to be among the lowest income and lowest population density locations in the country. The absence of high-capacity connectivity in these regions may impact ICT projects and programs such as connecting schools and the CeC program.

Broadband infrastructure deployment and development will be private sector-led…

- Nonetheless, the prospects for increased broadband penetration in the Philippines are very bright. Much of the development in broadband infrastructure will be driven by private sector efforts and initiatives, which in turn is being driven by an inevitable transition to broadband.
- The cellular industry sees limits in the voice sector as organic growth becomes limited and declining yields and alternative means of communication are exerting pressure on revenues and margins.
- The accelerating decline of traditional revenue sources is however both a result of the emergence, as well as requires the pursuit of new revenue streams. Broadband, as a high growth area, is the clear logical direction, as revenues continue to grow at double-digit rates.

Mobile/wireless broadband, in particular, is key…

- Considering there are more mobile phone users than those who depend on wireline-based services in the Philippines, an archipelago of over 7,100 islands, experts and industry players have banked on the dynamism of the wireless sector for broadband growth. This is likely to include a variety of technologies such as WiMAX, 4G and LTE, and potentially additional players such as cable TV providers.
- Mobile Internet access has grown from virtually zero in 2009 to 5% in 2010, with 40% of users planning to spend more time going online in this way.
- As of October 2010, PLDT-owned mobile operator Smart Communications reported that a total of 8.3 million Filipinos have accessed the Internet through the company's broadband and cellular networks. Smart Broadband Inc. (SBI), the telco leader's broadband unit, serves over 1.3 million subscribers while about 7 million Smart subscribers surf the Web and access other Internet-native services through their mobile subscription, whether post- or prepaid.
- Meanwhile, Globe Telecom said that as of Oct 2010, it has 1,006,460 broadband subscribers, compared with 517,355 in the same period last year. Further, it claims that their WiMAX subscribers surpassed the 100,000 mark last July 2010, and that they now have one of the largest WiMAX deployments in Southeast Asia. They further report covering nearly 60 provinces and 365 cities in the country.

As in ensuring free and fair competition…

- The growth in broadband is also driven by the increasing availability of more affordable prepaid broadband packages, and lower personal computer and USB Internet modem prices. While penetration rates remain low compared to overall world averages, competition in this space is expected to intensify as operators accelerate the rollout of their broadband networks and introduce new offerings to make Internet services more accessible to a larger market base.
- In this context, the regulatory environment will facilitate a level playing field for existing operators and new entrants and fair competition to allow for the use and deployment of these new technologies and facilities, particularly in rural and unserved areas.

However, the developments and socio-economic benefits of broadband will be limited to the urban centers

- Over the short to medium term, the promise of broadband will likely be fulfilled or pursued by the private sector mainly in the urban centers where demand is greater and more concentrated.
- Government, then, must step in to accelerate the roll-out to the entire country. The dispersed and rural nature of many parts of the islands, presents challenges, including affordability, the lack of important support infrastructure (electricity, transport) as well as bureaucratic red tape and hurdles.

Government can support shared access facilities (community e-centers), especially in poor and unserved communities.

- Internet cafes remain the most popular place for accessing the Internet among users, with 70% of the nationwide sample of Internet users utilizing such venues. But increasingly, the trend is moving towards personal access through the home, a friend's home or through personal cell phones/PDAs.
- From 2009-2010, Internet café use declined by 2%.
- Home use increased by 4%; Friend's house similarly by 4%.
- Cell phone/PDA increased from nearly zero to 5%
- There are between 30,000 to 40,000 Internet cafes throughout the country but many are under economic pressure. This could be a result not only from oversaturation/competition, but also the increasing personal access to wireless broadband, as well as increasing free Wifi access in public spaces (e.g., most malls). This has led to better services and cheaper rates though.
- The potential danger, particularly for the underserved, and those who do not have their own access devices, is the reduction in the number of public access venues for the Internet, as entrepreneurs and providers find them to be increasingly unviable and difficult to sustain.

The need for speed…..

- The most recent worldwide test results show that the average download speed in the Philippines is only 2.34 Mbps, while the average upload speed is 0.65 Mbps. This makes the Philippines 72nd in the worldwide rankings for download speed, and 65th for upload speed. In contrast, average download speed in South Korea is 20.94 Mbps, and in Japan and Hong Kong, 15.77 Mbps and 9.56 Mbps, respectively.
- Typical activities possible at various speeds:
- A speed of 500 Kbps to 1 Mbps can give users the capability to do basic e-mail, browse simple websites, and stream music and low-quality videos.
- A speed of between 1 Mbps and 5 Mbps, on the other hand, will already enable users to browse more complex sites, send and receive e-mails with larger attachments, share small and medium files, stream music, and watch digital broadcast video on one channel.
- The Philippines' average download and upload speed of 2.34 Mbps and 0.65 Mbps, respectively, can more or less do these functions.
- In countries, however, like South Korea and Japan where Internet connection speeds average between 15 Mbps and 20 Mbps, applications like telemedicine, educational services, standard and high-definition video, high-quality telepresence, high-definition surveillance, and smart or intelligent building control are possible.

3. INVESTING IN PEOPLE: DIGITAL LITERACY FOR ALL

The Department of Education's status and plans

The Department of Education (DepED) is operating 37,807 elementary schools and 7,019 (as of December 2010) high schools nationwide. It is responsible for providing free elementary and secondary education to all Filipinos. The DepED employs more than 480,000 teachers and 65,312 nonteaching personnel. Teacher-student ratio is pegged at 1:35 for public elementary schools and 1:39 for public high schools.

DepED's share in the national budget has not increased in the last 13 years (1995-2008). It remains constant at 13 percent, with an average of 0.3 percent decline in the per-student budget.

To support DepED's overall vision for education in the 21st Century, a five-year ICT for Education Strategic Plan (DepED ICT4E) was drafted in 2008. The plan also includes the ICT for Education Master Plan, Open content in Education Initiatives, PhEdNet, eQuality Program, Digital Media Arts Program and the ICT Skills Strategic Plan. Its purpose is in line with CICT's main goal which is to harness the power of ICT for Education and life-long learning.

Progress has been made equipping high schools with Internet access and computer laboratory

- About 6,453 out of 7,019 public high schools are equipped with Internet access and computer laboratory as provided for by different programs of DepED Computerization Program (DCP), DTI PCPS, CICT i-Schools Project, and NGOs.
- The i-Schools Project of CICT has equipped approximately 1,000 public high schools (i.e. 900 DEPED supervised schools of the and some are high schools of SUCs) with a wireless Internet laboratory (i-Schools Wireless Internet Learning Laboratory or iWILL) that has 20 Internet-ready computers, an LCD projector and printer. School heads and teachers were also trained on ICT integration in teaching and learning to facilitate the use of these facilities. The i-Schools Project was the recipient of the Digital Inclusion Award at the FutureGov Government Awards in 2009.
- Gearing up Internet Literacy and Access for Students (GILAS), a private sector initiative has also provided around 2,102 public high schools with 10 computers per school plus Internet access. Around 2 million students gained access to the Internet with this initiative, however, after one year 7% of recipient schools have discontinued their Internet access.

8% out of 2009 university or college graduates had a degree in IT

- There are 1,742 public and private universities and colleges in the Philippines. Out of this, 110 are state universities and colleges with 326 satellite campuses, 77 are local universities and colleges and 16 are special government schools. Latest figures show that there are 2.6 million college students enrolled in 2009 and about 480,789 have earned their degrees, 38,809 of which are in Information Technology.

There are ICT initiatives for out-of-school youths and adults

- A CICT flagship project, eSkwela, makes use of ICT as an alternative learning tool for out-of-school youths and adults. As of March 2011, there are 84 eSkwela centers nationwide. The main component of this project is the development of more than 300 e-learning modules and the training of instructional managers and mobile teachers in ICT-supported teaching and training. As a result of this endeavour, the average passing rate increased to 65.12% as compared to the national average of 22.94%. This project was also awarded at the UNESCO ICT in Education Innovation Awards in 2008.

Near-hire scheme had 70% success rate

- The Workforce Mobilization Program (WMP) is another kind of initiative that aims to match workers to jobs and vice versa. This program is a partnership between CICT, CHED, TESDA and private training institutions. A sub-program of the WMP called the 'Near Hire' scheme, upgrades the participants skills to the required level needed by ICT firms. In 2008 and 2009, 46,002 'near hires' trained out of 65,644 were hired. The WMP is also working on the formulation of ICT competency standards and competency-based certification examinations to professionalize the ICT sector in the Philippines.

Other ICT-related capacity building programs include

- The e-learning and/or technology-based distributed learning programs of open universities (University of the Philippines Open University and the Polytechnic University of the Philippines Open University)
- The University of the Philippines IT Training Center has about a hundred graduates per year in its one-year post-baccalaureate IT training program and about 1,000 trainees in its one- and two-week IT training courses
- TESDA's skills upgrading programs, which upgrade the competencies of IT graduates to enhance their chances of being absorbed by the IT and IT-enabled services industry, and training programs for individuals to gain ICT skills for purposes of employment
- IT training programs for higher education teaching staff of the Philippine State Universities and Colleges Computer Education Society (PSUCCESS), Philippine Society of IT Educators, Computing Society of the Philippines and Philippine Computer Society
- The Philippine National IT Standards (PhilNITS) Foundation's training courses for professionals from different industry sectors on 'Fundamentals of IT,' with the support of DTI and Japan's Ministry of Economy, Trade and Industry. Locally, PhilNITS trained 1,606 IT professionals and teachers and sent 124 scholars to Japan for training from 2003 to 2007. PhilNITS also certified 573 IT professionals out of 4,852 registered examinees for the FE exams, and 15 out of 30 examinees for the SW Certification Exam from 2002 to 2008
- The Information Technology Foundation of the Philippines (ITFP)'s Philippine-Australia Quality Technical Vocational Education and Training Project (PAQTVET II)
- Training programs by the Cebu Educational Foundation for IT (CEDFIT) to increase the absorption rate of college IT graduates in industry
- The Brain-Gain Network (BGN) is a program to bring Filipinos overseas back to the country and help upgrade the competency of local talents, including those in the ICT fields
- The Philippine Web Accessibility Group (PWAG) established eCare Centers which were specially designed to provide access and training programs for PWDs. The target is to establish one eCare center in each region

All these programs were part of the ICT in Education Master plan, which includes a National Roadmap for Faculty Development on ICT in Education and a National Framework Plan for ICTs in Basic Education (2005–2010).

A coherent national policy on ICT in education is a necessity

While there are many activities underway in ICT for education in the Philippines, more substantial progress needs to be made to remain competitive in the global digital economy, to better facilitate the transition to a knowledge society and to fulfill the social contract the Government has to empower the Filipino people by setting education as a priority investment. Research confirms that for ICT to be effective in education, ICT programs require that the Government demonstrates political will and champions the integration of ICTs to improve education and training in line with national development goals and frameworks. This Government involvement is critical to source additional investments in ICT infrastructure, to integrate ICT in the curriculum, and to facilitate the widespread diffusion of materials.

The main challenges remaining include

- The scarcity of quality labor pool and job-skills mismatch, especially in regard to the IT/BPO industry;
- The lack of coordination among ICT educational initiatives;
- The lack of connectivity and computer-equipment especially in elementary schools;
- The challenge of teacher ICT training; and
- Easy approaches to integrate ICT in education

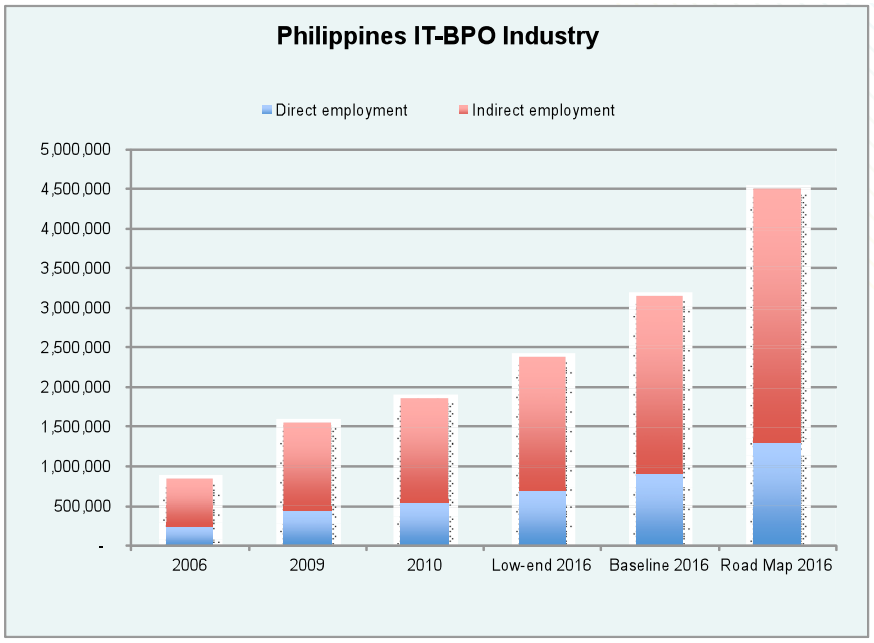
4. ICT INDUSTRY AND BUSINESS INNOVATION FOR NATIONAL DEVELOPMENT

The IT/BPO Sector and its contribution to job generation

The IT/BPO sector grew at a Compound Annual Growth Rate (CAGR) of 30% between 2006 and 2010, such that by 2010, it was estimated to provide employment to over 500,000 workers, bringing in revenues of USD 9 billion, and capturing 8% of the global market.

The graph below shows figures of direct and indirect employment generation of the IT/BPO industry in the years 2006, 2009 and 2010.

Figure A1
Philippines IT-BPO Industry



Source: BPAP data, Everest analysis

Furthermore, it also shows three scenarios for 2016

- Low-end expectations;
- Medium performance (baseline), and
- High expectations based on the implementation of the BPAP Roadmap 2016.

In the best case scenario, government, industry and the academic sector work together to achieve several key objectives:

- Maintain or improve overall cost competitiveness (i.e. including wages, incentives, telecom, real estate, etc.)

- Consolidate dominance in the U.S. and aggressively promote/grow footprint in the UK and APAC
- Rapidly demonstrate capability and scalability outside of voice, with a focus on high-growth segments for the future
- Accelerate scale-up of talent, while sustaining or improving cost competitiveness, regulatory environment, capital availability, and risk perceptions

The opportunity is that in the best case scenario, where government and industry work together and other conducive conditions, the IT/BPO industry could generate 4.5 million jobs, both direct and indirect. If no sufficient actions are taken by both industry and government, the job creation may be below 2.5 million full-time employees.

Industry creates increasingly employment outside of Metro Manila…

An important characteristic of the past growth is the expansion of employment to second and third tier cities in the regions. The number of full-time employees (FTE's) outside of the National Capital Region (NCR) as percentage of total increased from 17% to 25%. For future growth, the industry relies on expanding even to more cities, to have access to sufficient qualified workers.

…due to partnership between government and industry

This growth can be directly attributed to the CICT's focus on its Cyberservices Corridor program, along with the Next Wave Cities efforts, a joint initiative of BPAP, CICT, and DTI. Generally, the Philippines is seen as a mature player in a rapidly expanding industry. The Philippines has maintained its competitive position by being comparable to India in terms of operating cost and risk.

Opportunities for strong growth exists due to

- The Philippines favourable international overall ranking in the IT/BPO sector (#2 after India)
- Other market growth opportunities, e.g., EU/UK, Asia Pacific
- And overall global offshoring growth, expected to more than double by 2016

Challenges to address include the following

The key challenges facing this sector at this point in time are as follows:

- Inadequacy of Talent Development Ecosystem: while hiring uptake is currently at 80,000 a year, in coming years this is expected to grow to 130,000 or more a year. There is a strong concern among industry players that it will be hard to fill these jobs with skilled employees. (BPAP Roadmap, pp. 26-27)
- Lack of a Coordinated Marketing Campaign: two factors exacerbate this challenge – expansion of competition, and need to focus on new services and geographies. (BPAP Roadmap, p. 41-43)
- Outdated Policy Environment and Ecosystem: competitor countries are working to create a more enabling environment in terms of labor policies and fiscal incentives. (BPAP Roadmap, p. 30-33)
- Over-concentration of IT/BPOs in a few urban centers, which may lead to increased attrition rates and unhealthy wage inflation, as has occurred in certain Indian cities.

Increased Usage of ICTs in SMEs and key sub-sectors

Based on the 2008 Survey conducted by the National Statistics Office in collaboration with the CICT, 116,755 out of 137,747 companies surveyed are using ICTs in conducting their business. While this 85% participation rate is encouraging, it was noted that many of these establishments use ICTs for simple activities such as spreadsheet and document processing. In terms of using these ICTs to connect to the Internet, participation rate dropped below 80%. When asked if they had a website, less than 50%

answered yes. And when asked about using ICTs for e-commerce, the number dropped to less than 20%. (2008 SICT Report)

Key challenges are costs and skills

The key challenges to increasing ICT usage would include high costs of entry (capital expenditures associated with implementing advanced applications) as well as the lack of ICT skills to operate and maintain the ICT resources. There is also a perception that the degree of complexity related to deploying a Customer Relations Management (CRM) database or an Enterprise Resource Planning (ERP) system requires a sophistication that is beyond the capabilities of many SMEs.

Cloud computing can lower costs

However, a key shift in the ICT industry towards a cloud computing paradigm can address such challenges provided there is a sufficient broadband access and download speed available. In a recent study[2] , it is shown that "that the diffusion of cloud computing will provide a positive contribution to the annual growth rate (in the order of 0.2%), contributing to create about a million new jobs through the development of a few hundred thousand new SMEs in the whole EU-27." This is made possible by the fact that "cloud computing allows potential entrants to save on the fixed costs associated with

hardware/software adoption and with general ICT investment, and turns part of these costs into variable costs. This reduces the constraints on entry and promotes business creation." Moreover, "firms will be able to rent computing power (both hardware and software) and storage from a service provider and to pay on demand, as they already do for other inputs as energy and electricity."

ICT-enabled companies can be more competitive

Access to ICTs, and cloud computing specifically, will make SMEs more competitive by allowing for more rapid product and service innovation. As stated in another strategy, "Companies that do not adopt digital technology fail to benefit from the productivity and competitiveness benefits it offers. It will be no more acceptable for those in leadership roles to lack an understanding of technology than it is to lack an understanding of finance."

[2]"The Economic Impact of Cloud Computing on Business Creation, Employment and Output in Europe", Prof. Federico Etro, 2009, p.3-5

Development of this Strategy was undertaken by the Commission on Information and Communication Technology, in collaboration with government, private sector and civil society stakeholders from across the Philippines.