

NAME OF PROJECT: “Free Wi-Fi Internet Access in Public Places”

EXECUTIVE SUMMARY

The Department of Science and Technology, through its Information and Communications Technology Office (ICT Office), will embark to provide Internet connectivity in public places across the Philippines. This Project aims to accelerate the government’s efforts in enhancing Internet accessibility for Filipinos to accelerate economic, social and educational opportunities and in reducing the growing Digital Divide under the overarching e-Filipino Program of the DOST ICT Office. This project is directly in line with the “Internet For All” thrust identified in the Philippine Digital Strategy 2011-2016.

The budget for this project as authorized in the 2015 General Appropriations Act (GAA) is ₱1.408 billion, instead of the originally proposed ₱339 million in the National Expenditure Program (NEP).

With the increase in the budget, the scope of the project has been expanded. In addition to the original 748 plazas of Class 4, 5 and 6 municipalities, the public spaces in public school, libraries, government hospitals and rural health units, and possibly others, in all municipalities Class 3 and lower shall now also be covered. Sites in Metro Manila, Cebu and Davao, as well as other cities that will serve as distribution points or Points of Presence shall also be included.

Once fully deployed, the Project will serve 105,000 concurrent users with 256 kbps each, which is the lowest prevailing speed requirement for “broadband” service. A data volume based Fair Usage Policy shall also be implemented to promote an equitable distribution of the public service.

The concept of managed services shall be leveraged all throughout the project, not only ensure rapid rollout, a responsive service, allow economies, and other aggregation derived benefits, but also to create commercial opportunities for private sector participants that would redound to greater economic benefit through expanded services for all.

The Project by design shall be implemented using the new organization of the DOST ICT Office. Led by a Project Management Team, all vertical services and field operations offices and provincial offices shall have a role.

Contents

1. Framework Overview	4
1.1 Internet Situation in the Country	4
2. Project Outline	4
3. Policy Parameters.....	5
3.1.1 Steering Committee.....	5
3.1.2 Advisory Committee	5
3.2 Public Places and Availability	6
3.2.1 Universal Accessibility & Utility	6
3.3 Non-Compete.....	6
3.4 Usage.....	7
3.4.1 Bandwidth and Fair Usage Policy	7
3.4.2 Adherence to Public Policy	8
3.5 Implementation Strategies.....	8
3.5.1 Use of Managed Services	8
3.5.2 Independence of the Nodes and Links	8
3.5.3 Reuse of Public Sector ICT Infrastructure	9
3.5.4 Direct Capital Investments by the Public Sector	9
3.5.5 Public Sector Demand Aggregation.....	9
3.5.6 Use of Public Sector Utilities	9
3.5.7 National Public Key Infrastructure (PKI) Registration Authorities (RA)	9
3.6 Roles of Project Actors	10
3.6.1 Beneficiary Sites	10
3.6.2 Local Government Units	10
3.6.3 DOST Information & Communications Technology Office	11
3.6.4 System Management & Access (SMA) Service Provider	11
3.6.5 Connectivity Service Providers	11
3.6.6 Private Sector Registration Authorities	11
3.7 Other Policy Matters	11
3.7.1 Technology to Minimize Administrative Overhead	11
3.7.2 Other Free Wi-Fi projects.....	12
3.8 Funding Source.....	12
4. Technical Parameters	12
4.1 Coverage Area	12
4.2 Target Users.....	12
4.3 Log-in Scheme/Period	12
4.3.1 Level 1.....	12
4.3.2 Level 2.....	12
4.3.3 Level 3.....	13
4.4 Non-Compete and Fair Usage Policy.....	13
4.5 Compliance with Public Policy	14
4.6 Activities & Budget Allocations	14
4.6.1 Governance	14
4.6.2 Project Management.....	14

4.6.1	Management, Supervision & Administration	15
4.6.2	Social Marketing & Stakeholder Engagement	15
4.6.3	Capacity Building	15
4.7	Managed Services Components.....	15
4.7.1	System Management & Access (SMA) Service	15
4.7.2	International IP Transport Service	17
4.7.3	Domestic IP Transport (IPTD) Services	18
4.7.4	Municipal IP Transport (IPTM) Services.....	18
4.7.5	Site IP Transport (IPTS) Services	18
4.8	Operation and Maintenance	19
4.9	System Monitoring & SLA Enforcement	19
4.10	User Support	20
4.11	Implementation Schedule	20
5.	System Security	21
6.	Inquiry	21
	ANNEX A: System Overview	22
	ANNEX B.1: Typical Link Diagram for Sites in Metro Manila	23
	ANNEX B.2: Typical Link Diagram for Site in a PoPs	23
	ANNEX B.3: Typical Link Diagram for Sites Outside a PoP	25

1. FRAMEWORK OVERVIEW

1.1 Internet Situation in the Country

The Philippines currently has a modest 52-percent Internet penetration rate, nearly doubled in the past four years from 27-percent in 2010. The average connection speed is about 2.1 Mbps, with a little above 8-percent of the users enjoying connection speeds faster than 4 Mbps. In terms of user devices, laptops (45%) are the most preferred over desktops and mobile devices for Internet access. However, with only 20-percent of the total households having computers, a significant portion of the population still do not benefit from the Internet access despite the fact that each Filipino owns at least one phone or mobile device.

Data from the Department of Education as of April 2014 elucidates the situation well:

Public School	Count	w/ Internet Connection			w/ Grid Supply		
		None	Wired	Wireless	No	Yes	ND
Primary	38,683	85.8%	6.8%	7.4%	17.4%	82.5%	0.1%
Secondary	7,915	44.9%	22.3%	32.8%	8.3%	91.6%	0.1%
Total	46,598	78.8%	9.5%	11.7%	15.9%	84.0%	0.1%

The 85.8% of the 38,683 public elementary schools not having an Internet connection strongly suggests that many areas remain underserved or unserved with respect to broadband service. According to the large telecommunication companies, about half of the 1,496 municipalities are connected using pre-Internet technologies that limit the services they can deliver which includes broadband Internet. When asked if these cannot be upgraded, the general reply is that the market would not support the necessary ROI.

The deficit in the available services however prevents opportunities and benefits, including those from online public services, from reaching the people in those areas. With recently updated data from a World Bank report showing that for every 10 percent increase in broadband connectivity results in a 1.38 percent increase in Gross Domestic Product (GDP), the Project has tremendous potential to contribute to the economic development of the country.

2. PROJECT OUTLINE

The DOST ICT Office is mandated to formulate and recommend ICT policies that will help accelerate and develop the ICT Sector, promote the use of ICT to improve delivery of critical function of government services; and provide efficient and effective ICT infrastructure and information systems to the public. It shall be towards the fulfillment of its mandate that the DOST ICT Office will embark on this Project.

The Project shall provide wireless Wi-Fi Internet access at no-charge in selected public places. The implementation shall be in three (3) phases and targeted that the Project shall be operational in all Metropolitan areas by the 6th month of the Project. Coverage of all served areas is targeted to be achieved by the 11th month.

Next Generation Hotspot (NGH) a.k.a. Hotspot 2.0 technology shall be used throughout the network to promote a ubiquitous ICT environment, the efficient use of private and public sector investments, and a more competitive ICT ecosystem. It is noteworthy to mention that NGH technology employs open standards and is carrier grade.

Multiple actors shall necessarily be involved in this Project. Actors will include the DOST ICT Office, other national government agencies, local government units, ICT service providers and equipment/software vendors, civil society organizations, and the public. The ICT industry shall play a critical key role in this Project.

Aside from being the lead agency, the DOST ICT Office shall also align its other programs and projects to leverage and support this Project.

A 3-year Multi-Year Obligation Authority (MYOA) shall be sought from the Department of Budget and Management (DBM) to be able to enter into three (3) year contracts that shall make the necessary upgrades in both the served, underserved/unserved areas attractive, if not feasible.

3. POLICY PARAMETERS

3.1.1 Steering Committee

Given the deep cross-cutting nature of the project, and the potential increase of its efficacy to spur national development, the project shall create a Steering Committee to formulate general policy and coordinate interventions amongst its members and their various stakeholders.

The Steering Committee shall be composed of:

1. Department of Science & Technology (DOST), Chairman
2. Department of Interior and Local Government (DILG), Vice Chairman
3. Department of Tourism (DOT)
4. Department of Trade and Industry (DTI)
5. Department of Transportation and Communications (DOTC)
6. Department of Health (DOH)
7. Department of Budget and Management (DBM)
8. Department of Social Welfare and Development (DSWD)
9. Department of Education (DepEd)
10. Commission on Higher Education (CHED)
11. Technical Education and Skills Development Authority (TESDA)
12. National Telecommunications Commission (NTC)
13. Metro Manila Development Authority (MMDA)
14. National Library
15. League of Cities (advisor)
16. League of Municipalities (advisor)

The DOST ICT Office shall serve as the Secretariat of the Steering Committee.

3.1.2 Advisory Committee

To ensure project's effectiveness and feasibility, an Advisory Committee shall be formed that will be composed of various non-government stakeholders, including industry and

civil society. Members shall include (in alphabetical order), but not necessarily limited to:

1. Federation of the International Cable TV and Telecommunications Association of the Philippines (FICTAP)
2. InfoComm Technology Association of the Philippines (ITAP)
3. Internet Society (ISoc), Philippines Chapter
4. National ICT Council Confederation of the Philippines (NICP)
5. Philippine Association of Private Telephone Companies (PAPTELCO)
6. Philippine Cable Television Association (PCTA)
7. Philippine Electronics and Telecommunications Federation (PETEF)

The DOST ICT Office shall serve as the Secretariat of the Advisory Committee.

3.2 Public Places and Availability

Public places are social places that would be open and accessible to the general public. Public areas such as parks, plazas, schoolyards, libraries, public space in government hospitals and rural health units, transportation terminals, seaports and airports, etc. will typically be considered public places. Also included would be spaces open to the public in local and national government offices, barangay centers, etc.

The public service shall generally be accessible 24/7 except when requested by a competent authority such as the principal of a school, or the head of a government agency.

3.2.1 Universal Accessibility & Utility

Next Generation Hotspot (NGH) a.k.a. Hotspot 2.0 technology shall be required throughout the service to establish a ubiquitous ICT environment, support the efficient use of private and public sector investments, and promote a more competitive ICT ecosystem. Such will be possible because doing so will allow seamless user roaming between heterogeneous ISPs offering Wi-Fi access, both domestic and international, not to mention the possible use of other air interface systems such as 3G and LTE. This would also lead to the ability to more deeply engage the telecommunications industry. While NGH technology is relatively new, based on discussions with access point manufacturers, some local connectivity providers, including the large telcos already have NGH capable access points deployed.

With the ability to deliver site or even user specific information, a plethora of opportunities and services will result. The native use of Digital IDs will perfectly align to the e-Government programs and projects that would leverage the National PKI, which would greatly enhance the delivery of online government services. Internal government operations would also stand to benefit from the use of NGH.

3.3 Non-Compete

This Project shall give appropriate consideration and attention not to undermine existing services, particularly in the served areas, thru policy and technical parameters. In served areas, the Project shall aim to provide a lower entry barrier for users, as well as, improve accessibility. In underserved and unserved areas, consistent with the mandate of the DOST ICT Office to provide telecommunications services in such areas, the Project will

pursue public-private-partnerships to provide commercial services, but with direct government intervention (investment) only as a method of last resort.

Unfranchised site connectivity providers shall be allowed to offer commercial services using the natural franchise of the government through the DOST ICT Office. Care shall, however, be given to ensure that such shall merely be temporary interventions with the ultimate goal of seeing franchised commercial ICT services in all areas, as mandated by RA 7925, achieved.

“Broadband Internet access” will for the purposes of the Project be defined as connectivity to the Internet at a minimum speed of 1 Mbps with a latency of no more than 100 milliseconds from any point in the country to the Philippine Open Internet Exchange (PH OpenIX).

An area will be considered as:

“Served” – provided broadband Internet access, wired or wireless, is commercially available without imposed limits on data volume or otherwise;

“Underserved” – provided broadband Internet access, wired or wireless, is commercially available but does not meet all the qualifications to be considered as “served”; and,

“Unserved” – where broadband Internet access is not available.

Noteworthy would be the fact that globally there is no general agreement on the definition of “broadband”. Moreover, recent thoughts include, considering the rapid advancement of technology, not defining “broadband” in terms of speed or similar parameters but instead to define it in terms of the services available.

While the above definitions make no mention of affordability, it is common sense that denial of service due to lack of the capacity to pay should be a primary concern. This however must be counterbalanced to achieving sustainability that translates into an acceptable return of investment.

3.4 Usage

The Project shall provide open and free access to all, provided such will be consistent with prevailing public policy. Steps will also be taken to ensure that the public service will be enjoyed by as many as possible, and as equally as possible. Users will be required to agree to a set of Terms and Conditions upon first login.

The connectivity provided by this Project will not be meant for the operational requirements of public sector entities. However, the Project’s use of managed services will allow infrastructure sharing that could provide services for internal use of public sector agencies. For the connectivity that will be needed for public sector operations, separate funds should be prepared so that additional capacity may be procured.

3.4.1 Bandwidth and Fair Usage Policy

This Project will be implemented to deliver Internet access with a user experience not higher than the lowest service level provided by commercial Internet access services, at least in the served areas.

The above shall only apply to Wi-Fi access. Optional air interfaces such as cellular broadband (3G/LTE), if employed, shall be exempt.

3.4.2 Adherence to Public Policy

The Project shall endeavor to ensure that the Free Wi-Fi public service shall be used for purposes consistent with public policy. This shall be implemented by restricting the services made available through a Whitelist and/or Blacklist and other technical means.

3.5 Implementation Strategies

3.5.1 Use of Managed Services

Use of Managed Services sourced as service subscriptions from the private sector shall be the primary means of implementing this Project. Doing so will enable rapid rollout, maximized use of public funds, and ensured reliability and resiliency. Open standard technologies (e.g. ITU-T Y.1731, ITU-T Y.1564, SNMP, RADIUS accounting, etc.) shall be leveraged to their fullest to achieve diligent monitoring and strict enforcement of the Service Level Requirements (SLRs) on the services subscribed to.

The procurement of the managed services shall adhere to RA 9184, and shall generally be procured as Goods and Services through public bidding.

Use of managed services shall by default reuse existing private sector infrastructure. This will maximize the use of the existing ICT infrastructure investments of the country, avoid duplications, and leverage economies of scale. Generally, the service subscriptions shall be on a 12-month basis consistent with current regulations. However as private sector investments shall be necessary to upgrade or build new infrastructure in the underserved and unserved areas authority to enter into 36 month service contracts when justified shall be sought.

Using managed services will allow providers flexibility in determining solutions to implement the public service while meeting the SLRs required. For example, link redundancy requirements would not need to be specified and physically verified, but instead would merely be specified as an availability specification (e.g. 99.8% which translates to downtime of less than 3 minutes in a day), and the implementation of a monitoring system that would accurately measure downtime.

Use of managed services shall also be expected to yield commercial opportunities for the private sector providers that would in turn lower costs for government, and more importantly, make available wider, and even new, services for the public. While seeking revenue sharing would be possible, the Project shall not pursue this to avoid the complexity of tracking these other revenues. The Project shall instead seek fixed discounts.

3.5.2 Independence of the Nodes and Links

The service shall be implemented through “nodes” and “links”. Nodes shall be those elements that switch/route, transform, or store/supply data, which would include Wi-Fi access points, network switches, and data caches (servers), etc. “Links” shall be facilities that transport data from one node to another, or to the Internet.

Nodes shall be used to measure the performance of the links, and to enforce the SLRs. Compliance of the nodes shall be measured through user devices as well as directly by the ICT Office.

Given this fiscal relationship, it will be critical that the service provider for the nodes (there will only be one) would be independent of the any of the link service providers.

3.5.3 Reuse of Public Sector ICT Infrastructure

Reuse of the shared services provisioned under the Integrated Government Philippines (iGovPhil) project, the PH OpenIX, and the PREGINET projects shall be mandatory.

Use of other existing public sector assets such as the DOST ICT Office outside plant facilities (e.g. poles, copper or fiber optic cables), telecommunication towers and other facilities, shall likewise be pursued.

3.5.4 Direct Capital Investments by the Public Sector

The Project will invest a 28% of the approved budget of ₱1.408 billion in capital outlay in its first year to provide basic facilities and essential administrative and monitoring capabilities. Capital outlay in succeeding years, as currently planned, shall be ZERO.

Other government agencies/units shall be discouraged from investing in capital outlay, except when doing so will clearly be more judicious or found absolutely necessary. A better assessment of whether there is a need for the government to make further capital investments will be done once sufficient data will have been collected.

3.5.5 Public Sector Demand Aggregation

Aggregation of public sector connectivity requirements particularly those provisioned for other programs and projects of the DOST ICT office shall be sought to achieve higher economies of scale.

3.5.6 Use of Public Sector Utilities

The Project shall allow the reasonable use of public sector utility electricity at all locations as provided for under 2015 General Appropriations Act¹ (TBC).

The Project shall likewise be generally allowed the use of DOST ICT Office resources provisioned in its facilities, however, on an AS-IS basis and under no circumstances shall the DOST ICT Office be responsible for a provider's SLR compliance. Provider equipment, using DOST ICT Office resources, to be used for other purposes shall not be allowed unless explicitly included as part of the contracts.

3.5.7 National Public Key Infrastructure (PKI) Registration Authorities (RA)

Ubiquitous access to the Free Wi-Fi public service shall be enabled by the use of Digital ID issued by the National PKI, in tandem with NGH technology. A critical factor will thus be the availability and ease of securing a Digital ID. Another factor will be the ability to

¹ General Appropriations Act of 2015, Volume II, Page 851, Special Provision, "1. Free Wi-Fi Internet Access. In order to expedite implementation of the "Free Wi-Fi Internet Access in Public Places", agencies from the government and LGUs where the Wi-Fi Internet access are located shall extend cooperation and assistance, including the reasonable use of electricity and facilities for the purpose and ensure the security of the equipment."

provision the necessary ICT resources to make online verifications available. Establishing verification services at the PoPs shall be considered.

The first choice for RAs would of course be public institutions already issuing identification credentials. However, as this will require time and effort beyond the control of the DOST ICT Office, the agency, thru its FOOs and their Provincial Offices shall also provide PKI registration services.

Public-Private-Partnerships shall also be considered in implementing this requirement to achieve the wide availability necessary as well as to minimize the administrative workload that would be added to government.

3.6 Roles of Project Actors

3.6.1 Beneficiary Sites

Generally, beneficiary sites shall as much as possible not be required to operate or maintain any of the equipment or undertake ancillary works required for this Project. Their responsibility with respect to these shall be limited to making available utility power and allocating the necessary space.

Beneficiary sites will be engaged through a Memorandum of Understanding (MOU) with the DOST ICT Office to reasonably facilitate and assist any necessary work that would need to be done by a private sector provider. Private sector providers will be responsible for direct coordination with beneficiary sites on their specific requirements and/or conditions, and ensuring that those will be met. The DOST ICT Office shall provide a Pro Forma Memorandum of Agreement (MOA) for the beneficiary and a private sector provider to enter into.

3.6.2 Local Government Units

The cooperation of all LGU shall be sought for the implementation of this Project. The LGUs shall mainly provide “front desk” services that would include social marketing, and administrative assistance (custodianship). Training and support for the LGUs shall be provided by the ICT Office or the contacted private sector providers as necessary.

With respect to user registration, each LGU shall be enrolled to serve as a Registration Authority for the National Public Key Infrastructure. Ideally, this would be down to the barangay level, however, the feasibility of this has yet to be determined due to the challenges of the currently unserved barangays.

LGUs shall not be responsible for user support, which shall instead be provided by the private sector providers and the DOST ICT Office.

LGUs with unserved or underserved areas shall also be enjoined to distribute this public service by provisioning connectivity to those areas by providing fiscal support/incentives to local private sector connectivity providers to which the LGU may subscribe to. Direct capital investments by the LGUs themselves will not be encouraged. Furthermore, while it will be entirely up to the LGUs and/or their providers to decide what technologies to use, the use of TV White Space Technologies shall be advocated by the DOST ICT Office for which technical assistance and support may be provided.

LGUs will also be responsible for configuring the location specific content of the Capture Web Portal. DOST ICT Office shall provide technical assistance for this in the form of provisioning funds to hire a local web content developer.

3.6.3 DOST Information & Communications Technology Office

The DOST ICT Office shall be the lead agency responsible for the overall planning, implementation and management of the Project, and ensuring compliance to the guidelines and directives given by the Steering Committee. It shall be responsible for qualifying and selecting sites subject to the prescribed qualifications and adopted priorities.

A Project Management Team (PMT) directly attached to the Office of the Executive Director shall be created, and the matrix organization of the DOST ICT Office shall be fully leveraged.

The DOST ICT Office shall be responsible for providing beneficiaries with technical and administrative support, and capacity building, and shall also perform 2nd level and 3rd level user support once its personnel have been properly trained.

3.6.4 System Management & Access (SMA) Service Provider

The provider of this service shall serve as the overall systems integrator of the Project with responsibility to manage provisioning of connectivity services under the direct supervision of the DOST ICT Office.

3.6.5 Connectivity Service Providers

Connectivity service providers shall be responsible for provisioning IP data communication links from one point another, meeting SLR obligations. Four (4) groups of connectivity service providers shall be engaged for: 1) international IP transit; 2) domestic IP transit; 3) middle mile connectivity; and, 4) last mile connectivity.

3.6.6 Private Sector Registration Authorities

The Project shall consider enlisting private sector entities to serve as Registration Authorities. As the project will have no allocated funds for this activity, a public-private-partnership arrangement shall be sought.

Care shall however be given to ensure compliance with the requirements of the National Public Key Infrastructure policies, rules and regulations. Only GOCCs and regulated private sector entities such as financial institutions, franchised telecommunication and VAS providers, postal and courier services, etc. will be considered.

3.7 **Other Policy Matters**

3.7.1 Technology to Minimize Administrative Overhead

ICT technologies as a matter of policy shall be leveraged to minimize the administrative overhead. For example, inspections of the sites by DOST ICT Office personal shall be minimized by engaging "Site Coordinators" who, for example in the case of a public school site, would be a teacher, to do the testing using a secure mobile application to be developed for the Project.

3.7.2 Other Free Wi-Fi projects

The use of NGH technology by this Project will allow seamless ubiquitous roaming of users amongst sites of the Project. The same would be technically feasible with Wi-Fi access points of other Free Wi-Fi systems should they likewise be using NGH technology. The project will thus encourage other similar projects, even those undertaken by the private sector, to interoperate with this Project so as to provide the beneficiaries with the maximum benefit.

3.8 Funding Source

The funding will be from the General Appropriation Act.

4. TECHNICAL PARAMETERS

4.1 Coverage Area

The Project will cover selected public spaces at:

1. Public Plazas and Parks
2. Public Primary and Secondary Central Schools
3. Public Libraries
4. Rural Health Units & Government Hospitals
5. State Universities & Colleges
6. Train Stations of the MRT and LRT systems
7. Airports and Seaports
8. City and Municipal Halls
9. National Government Offices

Priority shall be given in the above order, and to lower income municipalities.

Sites around nodes, particularly the PoPs and IP Core, shall also be covered considering the relatively low incremental cost of providing service in these areas.

4.2 Target Users

All Filipinos and visitors to the country will be the target users of this project.

4.3 Log-in Scheme/Period

This public service is envisioned to provide ubiquitous connectivity to the Internet for all Filipinos and guests of the country. A multi-level registration system will thus be employed.

4.3.1 Level 1

This shall be the lowest level of registration and will only require the machine ID (MAC address) of a device for a user to gain access after ensuring that the device shall actually be in use by a human through an appropriate method implemented at the Captive Portal greeting page.

4.3.2 Level 2

Registrations at this level shall require that a user present a Philippine government issued ID, or in the case of a foreigner, a valid passport, at any designate registration

authority, or possibly through a web-based registration system that would accept an image of an acceptable ID. 2-factor authentication will also be considered for use using a mobile phone number, or an e-mail address. A username and password will then be issued to the registered user so that he/she may then use the account on multiple devices.

4.3.3 Level 3

The highest level of registration shall be where a user will be issued a Citizen's Digital ID subject to the requirements of the National Public Key Infrastructure that will be used to gain access to the public service. At this level, a user shall be gain full access to benefits of this public service, as well as, full access to e-Government services. The Digital ID shall be tied to the Common Reference Number (CRN) of the Universal Multi-purpose ID (UMID). This level shall not be available to non-citizens.

4.4 Non-Compete and Fair Usage Policy

All users shall be provided 256 kbps of bandwidth at the designed capacity, regardless of their level of registration but with varying degrees of assurance of the speed. The bandwidth value is chosen so as not to undermine commercial broadband services, which generally have a minimum of 512 kbps. Noteworthy also is that 256 kbps is the prevailing minimum value for "broadband" though many administrations (countries) and organizations have higher values.

A Fair Usage Policy (FUP) shall be implemented by imposing limits on the amount of data a user will be allowed to transfer as is typically done by the mobile broadband industry. This will ensure that this public service shall be available for as many users as possible. The FUP shall be imposed correspondingly with each user's registration level (See Section 4.3 below).

Level	Registration	Data Allocation		Speed	
		Daily	Monthly	Kbps	Assurance
3	Gov't Digital Certificate	300 MB	3 GB	256	High
2	Gov't ID / Passport	100 MB	2 GB		Low
1	Device ID	50 MB	1 GB		None

These data limits will apply to traffic generated on the domestic or international links that will be limited due to cost. Data however sourced from caches shall not impact a user's data limit.

The limits given should be considered indicative and may change.

4.5 Compliance with Public Policy

Level	Registration	Ports Allowed	Content
3	Gov't Digital Certificate	Any	Any except those in a Blacklist of sites found inconsistent with public policy.
2	Gov't ID / Passport	Restricted to commonly used ports	Only from sites in a Whitelist that would include news, education, and government, social networking websites, and selected public e-mail systems.
1	Device ID		

4.6 Activities & Budget Allocations

The following table summarized the major activities and the budget allocation for each:

Major Activities	Maintenance, Operating and Other Expenses	Capital Outlay	Total
Governance	408,800	-	408,800
Project Management	25,164,000	-	25,164,000
Management, Supervision & Administration	909,043,000	214,773,000	1,123,816,000
Social Marketing & Stakeholder Engagement	93,269,000	-	93,269,000
Capacity Building	166,012,100	-	166,012,100
Total	1,193,896,900	214,773,000	1,408,669,900

4.6.1 Governance

The Steering Committee shall meet at least four (4) times a year to discuss and decide on relevant policy matters. These matters will include the Terms and Conditions for the use of this public service, among others.

It shall also identify possible areas of cooperation/collaboration with the Project.

4.6.2 Project Management

The PMT shall consist of a Sr. Project Director and 3-4 Project Area Directors. The Asst. Director of each Field Operations Offices (FOO) shall also serve as an Asst. Project Area Director in the PMT, and shall be responsible for all the sites with an FOO's jurisdiction.

The DOST ICT Office Services (verticals) shall provide services to the PMT, and shall be allowed to hire contractual manpower for the project as required and authorized by the PMT.

4.6.1 Management, Supervision & Administration

These activities shall provision and ensure the availability and performance of the Free Wi-Fi service. They shall include the laying of fiber optic in selected government centers and site build-up in all the FOO and its provincial offices to provide/perform, among others: 1) PKI registration services; 2) Level 2 and 3 user support; 3) coordination and assistance of stakeholders and service providers; and, 4) site inspections.

4.6.2 Social Marketing & Stakeholder Engagement

The social media and advocacy campaign for the Free Wi-Fi Project will develop a brand that is friendly, relevant and educational. This brand will cut across our social media handles and cascade in visual design as well as language and tone to our brand's identity system (i.e. website, mobile app, and various information, education and communications materials), along with tri-media to extend our reach both digitally and traditionally to our stakeholders and partners.

Various levels/designs of information and advocacy campaigns will be crafted and conducted in the metro-cities of the country, as well as our eight (8) field operations office and key municipalities throughout the nation.

The campaign efforts shall be in coordination with the LGU and other relevant NGAs, and shall continuously refine and modify the information design to optimize communication between the office and the public in all levels of our identity system.

4.6.3 Capacity Building

The ICT Office shall be responsible for providing beneficiaries with technical and administrative support, and capacity building. It shall oversee the development, management, and implementation of the capacity building activities of the Project. Training and support for the LGUs shall be provided in partnership with the Field Operations Office of the ICT Office or a contracted private sector provider, as necessary. Among the identified training modules include:

1. Training for Users
2. Training for Capture Portal Content Managers
3. Training for Site Coordinators
4. PKI RA Training
5. Training for FOO-PO Staff

4.7 Managed Services Components

The managed services will be segmented in such a manner so as to ensure manageability and maximum competition amongst industry players in level playing fields.

The managed services shall consist of the following component services: 1) System Management & Access; 2) International IP Transport; 3) Domestic IP Transport; 4) Municipal Transport; and, 5) Site Transport.

4.7.1 System Management & Access (SMA) Service

The SMA Service shall be implemented by a single provider that shall provide services to implement NGH Wi-Fi access with a capacity for 105,000 concurrent users at any given time from a database of no less than 20 million registered users and 40 million registered

user devices, connecting through up to 18,117 Unit Access Points (uAP²), subject to one more Service Level Requirement (SLR) agreements. With about 9,700 uAPs deployed in underserved and unserved areas, many would be expected to use TVWS devices that would require a TVWS database access service.

Specifically, among others, this service shall provide:

- NGH compatible carrier-grade Wi-Fi access service;
- Database services for TV White Space Technologies devices;
- End-to-end traffic management services, including content distribution;
- Satellite-based data distribution services for online and offline caches;
- Network management services to monitor and manage the entire system, including remote web-based access to these services at the Central Office, all FOOs, all FOO provincial offices, as well as, all participating connectivity providers;
- Multi-instance customizable Capture Portal services for logging users in and out that will be customizable with site specific information;
- Multi-level helpdesk system services;
- Owner and 3rd party cache hosting;
- Local IP peering services at PoPs and mPoPs; and,
- SLA enforcement services for connectivity services that would be procured separately.

The bulk of the provider's cost in the provisioning this service shall be the investment in Wi-Fi access points. Aggregating the access point requirements will allow a volume purchase by the provider but more importantly create an opportunity for the winning provider to offer other services through the shared use of the Wi-Fi access points. It could be expected that 40-60% of the access point costs would be covered by the other possible revenue streams.

In addition, other possible opportunities will exist. Access to the TVWS database service for devices to be used in other applications/services outside this project would be one. Another could be through the provider offering commercial services in the unserved areas under the natural franchise of the government, or through the service provider's own legal personality.

All of these would redound to lower costs for the Project. Thus, the project shall seek to leverage these facts.

²A "uAP" is a conceptual Wi-Fi Access Point that can handle 20 concurrent users simultaneously while still achieving its unloaded throughput. In an actual application, depending on actual site conditions, several uAPs capacity requirements may be combined and served by a bigger access point, or possibly divided into smaller less capable access points. The determination of what actual access points to use will be left to the service providers to determine, provided the resulting service will remain compliant to the service requirements specified.

The SMA shall also be responsible for ensuring a responsive and enjoyable user experience while minimizing International IP transit and local IP transport traffic. It shall be implemented with three (3) levels of caching and peering. The first level of caching shall be the IP Core / PHOpenIX that already exists, while the second level shall be at each of the fourteen (14) Points of Presence (PoP). The third level shall be at the municipal level but may be a subset of the caching at the first two levels.

Last mile traffic, including that from the rural areas, should be expected at an estimated 25.4 Gbps. The Service shall aim to keep international and domestic IP traffic at no greater than 18 and 14 Gbps, respectively. This shall be done by maximizing cache performance with a minimum first and second level cache hit rate of 30%.

Domestic IP transport links should not be allowed to carry less than 1 Gbps to ensure that PoPs will meet the minimum traffic requirements necessary to attract private sector content caches particularly those that are popular and generate large volumes of traffic such as Google, Facebook and others.

The Service shall be allowed to provide hosting services at the PoPs as this would further reduce traffic on the local IP transport links and improve user experience.

Domestic peering shall be mandated for all traffic that results from this project. This in tandem with caching and possibly local hosting will significantly reduce the use of local and international IP transport bandwidth.

PoPs shall be established at seven (7) identified Centers of Government (CoG) where large numbers of public offices would be found. This will allow internal requirements of the many government offices to be aggregated that would redound to savings for government. An additional seven (7) PoPs shall be established at other strategic locations across the country.

The peering service at each PoP shall also be opened to the commercial traffic of local ISPs provided they provision their own bandwidth and accede to full net neutrality. This, in combination with the presence of data caches, will greatly enhance the user experience for all.

The Philippine Open Internet Exchange (PH OpenIX) – a project of the DOST Advanced Science & Technology Institute (ASTI), shall serve as the national peering point to which this project shall seek membership.

4.7.2 International IP Transport Service

This service shall provide the 17.5 Gbps of bandwidth between the project's IP Core and the Internet.

Tranche	Bandwidth (Gbps)	Delivery Date
1	12.3	45 days after NTP
2	3.8	105 days after NTP
3	1.4	165 days after NTP
Total	17.5	

4.7.3 Domestic IP Transport (IPTD) Services

The Domestic IP Transport Services will be expected to carry an average of 1 Gbps that could possibly vary +/- 50% according to the requirements at each particular PoP. Three (3) DIPT services shall be provisioned according to the country's three island groups.

No.	Island Group	Point of Presence
1	Luzon	1) Tuguegarao, Cagayan; 2) Dagupan, Pangasinan; 3) San Fernando, Pampanga; 4) Lipa/Batangas City, Batangas; 5) Legaspi City, Albay; 6) Puerto Princesa, Palawan;
2	Visayas	1) Iloilo City, Iloilo; 2) Cebu City, Cebu; 3) Calbayog City, Leyte; 4) Tacloban City, Samar
3	Mindanao	1) Butuan City, Butuan; 2) Pagadian City, ARMM; 3) Davao City, Davao del Sur; 4) Zamboanga City, Zamboanga

The bandwidth shall be delivered in three (3) tranches:

Tranche	Bandwidth (Links x Gbps)			Delivery Date
	Luzon	Visayas	Mindanao	
1	6 x 0.6	4 x 0.6	4 x 0.6	45 days after NTP
2	6 x 0.3	4 x 0.3	4 x 0.3	105 days after NTP
3	6 x 0.1	4 x 0.1	4 x 0.1	165 days after NTP
Total	6 x 1.0	4 x 1.0	4 x 1.0	

Possible implementation modes for the long haul (backbone) requirements include 1) leasing of bandwidth capacity; and 2) leasing of infrastructure.

Capital outlay investments for local IP transport shall not be considered at this time unless clearly advantageous to the government.

4.7.4 Municipal IP Transport (IPTM) Services

There shall be 997 IPTM services with one for each of the 997 beneficiary municipalities. An IPTM service shall connect an mPoP to one or more PoPs at a specified bandwidth, subject to a SLR agreement. This is commonly called the "Middle Mile".

An IPTM service shall not be required to have a specific physical implementation but may instead be implemented virtually to allow industry to optimize and to ensure shared use of infrastructure may be used.

Considering information gathered from the industry, it is estimated that about half of the 1490 municipalities are still connected using pre-Internet technologies that may need upgrading, and would thus require 36-month contracts.

4.7.5 Site IP Transport (IPTS) Services

IPTS services will be classified as either: Last Mile, or Rural Mile. The Last Mile links would be those from a PoP or mPoP to a site within the area served by local connectivity providers. The Rural Mile links would be those to a site in an underserved or unserved area.

There shall be up to 18,117 IPTS services – with one for each site. The exact number of sites is not yet known at this point as all sites have yet to be identified. An IPTS service shall connect a Wi-Fi access point to one or more PoP or mPoP at a specified bandwidth, subject to a SLR agreement that shall be monitored and enforced through the access points.

No.	Site Locations	Last Mile	Rural Mile
1	In Metro Manila	1,485	n/a
2	In Metro Cebu, Metro Davao, and Cities w/ PoP	680	9,706
3	In Municipal Centers w/o PoP	6,246	
TOTAL		8,411	9,706

An IPTS service shall not be required to have a specific physical implementation but may instead be implemented virtually to allow industry to optimize and to ensure shared use of infrastructure may be used.

While implementation of the rural mile shall be technology agnostic, the use of TV White Space (TVWS) technologies shall be allowed using the TVWS database service provided by the System & User Access Management, subject to the NTC regulations that will be issued.

An IPTS service shall be responsible for installing access points and providing 1st level operations and maintenance services.

Generally, utility power shall be provided by the beneficiary sites. The Project however should also recognize that some sites will not have utility power, as would be the case for about 7,403 public schools based on DepEd data. Provisioning of utility power from alternative sources shall be another service provided by an IPTS service. The standard SLR Agreement for connectivity services shall likewise take this situation into consideration so as not to unduly drive up the cost.

4.8 Operation and Maintenance

The system shall be operated and maintained 24 hours a day 7 days a week by the SMA Service, in coordination with connectivity services, under the direct administration and supervision of the DOST ICT Office.

Sites that will not always be accessible to the public will be encouraged to set the operating hours of the sites so as to conserve electricity. This however shall necessarily be coordinated with the SMA Service (see Section 4.9) to ensure fair enforcement of service level agreements with other private sector providers.

The SMA Service shall provision, operate and maintain a central Network Operation Center (NOC) at the DOST ICT Office, and remote NOCs at each of the 14 PoPs and the 82 provincial offices of the DOST ICT Office.

4.9 System Monitoring & SLA Enforcement

System Monitoring shall be performed 24/7 considering that once in place the public would rely heavily on this public service, especially those in the currently unserved areas.

Compliance to SLR Agreements shall be done on a periodic basis sufficient to enforce them.

Reference Servers located at the Project's IP core switch, at each of the PoPs, and at Municipal PoPs shall be used for periodic testing of the system's performance. The Wi-Fi access points shall also be used as reference points.

All connectivity performance shall use ITU-T Y.1564 (RFC2544), SNMP v3 and RADIUS/DIAMETER protocols with each device identified and secured through Digital Certificates issued by DOST ICT Office.

Secure verifiable automation methods provided to Site Coordinators, and users as well, shall be employed to minimize the administrative overhead as well as to ensure a smooth reliable public service. To monitor and test Wi-Fi access points, an end user mobile application will be made available.

4.10 User Support

The SMA Service shall implement a multi-level support, "help desk" system that shall provide SMS, voice, e-mail and online web-based forum channels".

First level support shall be provided by each IPTS service as part of their service contracts. The signage at each site shall bare the contact information of the site link provider of that site, as well as the national contact numbers. Each provider shall also be monitored for user support performance.

Second level support shall be provided by the SMA Service provider during first 6-months of operations during which they shall also train DOST ICT Office personnel at the Central Office (CO), the Field Operations Offices (FOO), and FOO Provincial Offices (FOO-PO) who shall eventually take over the 2nd level support function.

4.11 Implementation Schedule

The services that will be made available by the Project shall begin as early as June with the first six (6) months necessary for the procurement and mobilization processes. Full coverage shall be aimed to be achieved by November, considering that four (4) site connectivity procurements will have to be undertaken which would be the Project's critical path.

Multiple procurements should really be expected, considering that there will be many target sites currently without connectivity. Saving from easily connected sites will be expected to yield savings that shall in turn be used to fund sites requiring infrastructure investments or upgrades. Unavoidably, this will however prolong the procurement period, and ultimately delay the delivery of the services.

Registration levels and the FUP shall be implemented in three (3) phases.

Phase 1 will enable the Level 1 registrations. This will be very easy to implement and will take a single month. However since the Backend, which includes the multi-instance customizable capture portal, shall not be finished by then, the full functionality will not yet be in place.

Phase 2 will implement Level 2 registrations. This will require the Backend and will thus become available only upon its completion. At this point, in addition to a fully functional capture portal, the Fair Usage Policy will be enforced.

Phase 3 will implement Level 3 registrations. This will involve establishing Registration Authorities across the country, which shall adhere to the necessary policies and procedures of the National PKI. After RAs will have been established, it will be necessary for users to register at this level which will involve a personal appearance. The logical choice to take on the role of being an RA would be the LGUs, specifically the barangays. However considering that many barangays will still be unserved, the project will instead consider starting with the municipal governments who may later capacitate the barangays. Collaboration with the private sector will also be considered using existing models such as those used for birth certificates and certain passport related services.

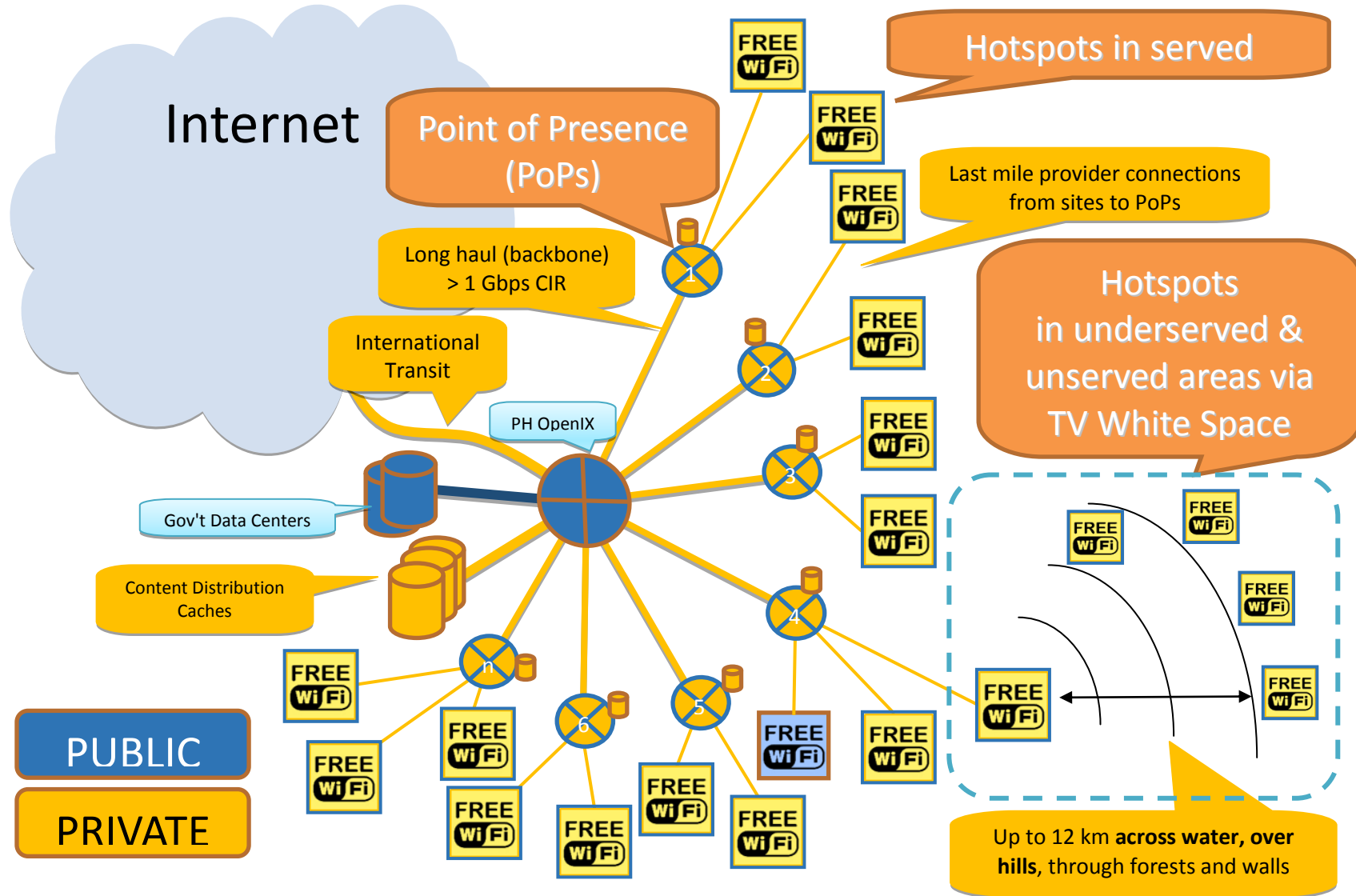
5. SYSTEM SECURITY

The System & User Access Management shall be fully integrated into the iGovPhil systems so that this project will enjoy the security provided for all public facing e-government systems.

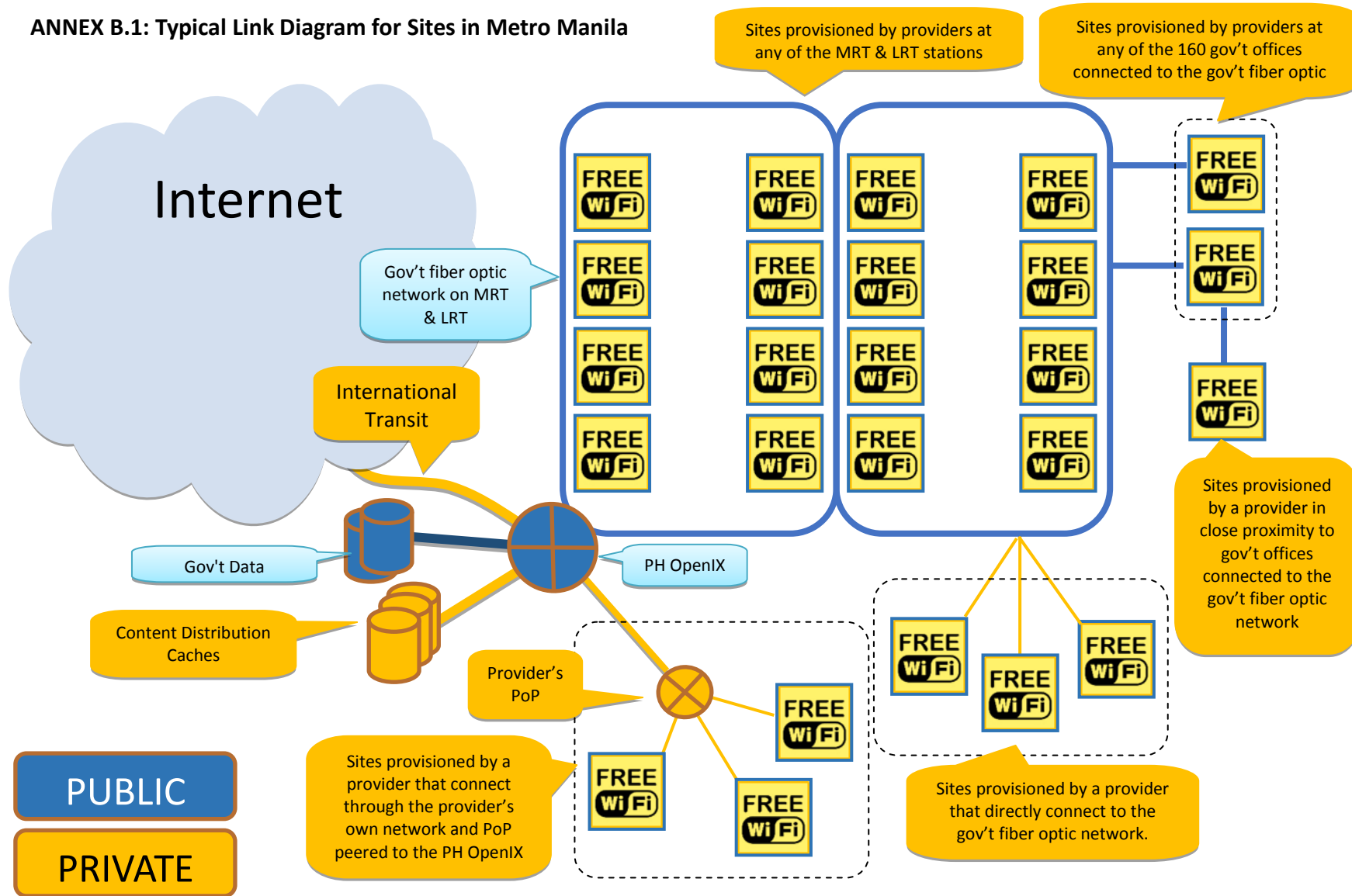
6. INQUIRY

All inquiries will be directed to ICT Office.

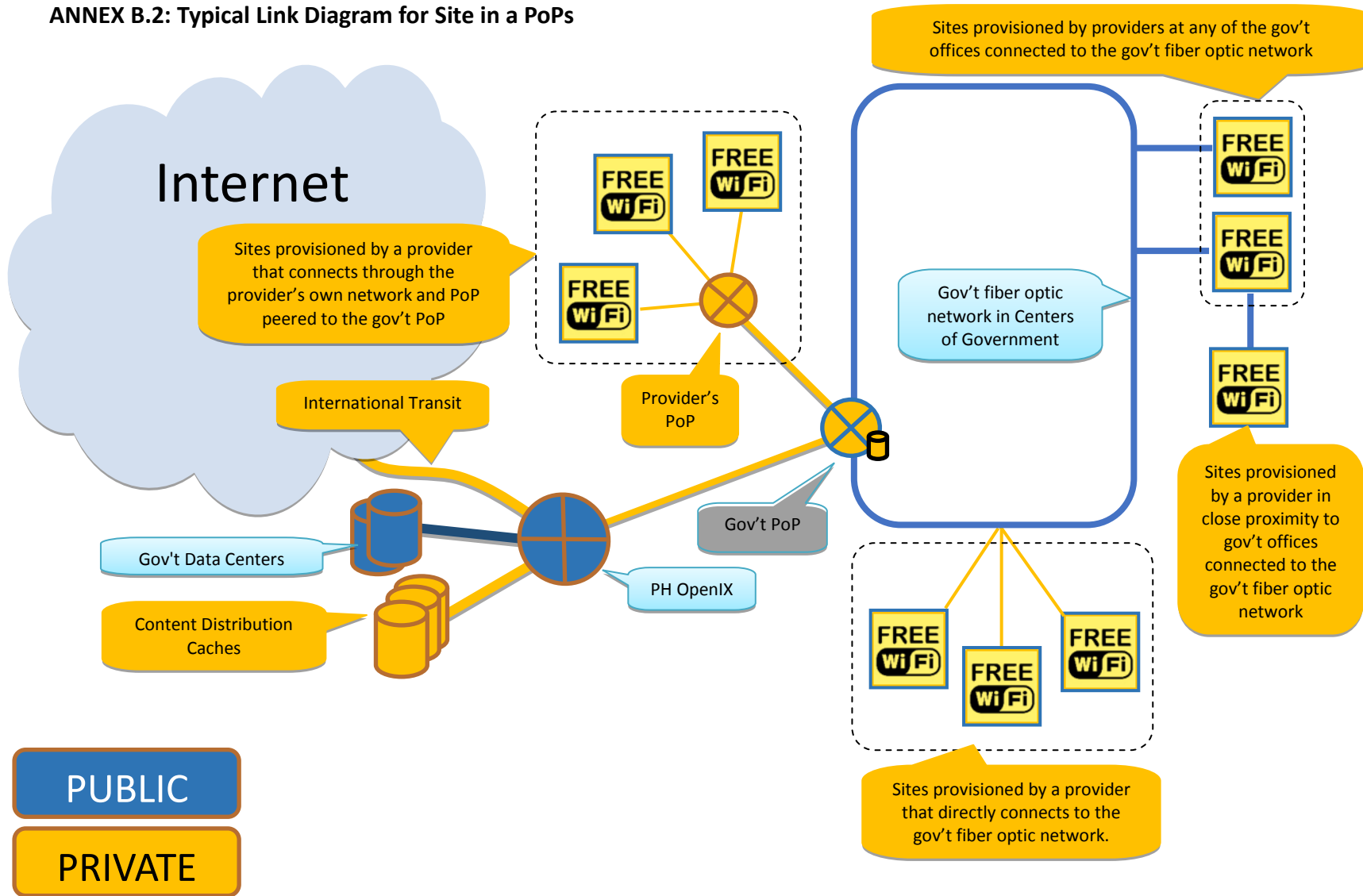
ANNEX A: System Overview



ANNEX B.1: Typical Link Diagram for Sites in Metro Manila



ANNEX B.2: Typical Link Diagram for Site in a PoPs



ANNEX B.3: Typical Link Diagram for Sites Outside a PoP

