




Republic of the Philippines
OFFICE OF THE SECRETARY
1100 Quezon City

February 8, 2021

MEMORANDUM

TO : ALL SERVICE DIRECTORS
ALL REGIONAL EXECUTIVE DIRECTORS
ALL BUREAU DIRECTORS
ALL HEADS OF ATTACHED AGENCIES AND CORPORATIONS

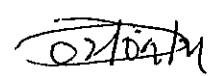
FROM : 
ROLDAN G. GORGONIO
Chairperson, Digital Agriculture Task Force
Undersecretary for Administration and Finance

SUBJECT : SUBMISSION OF ICT RESOURCES INVENTORY

One of the priorities of the Secretary is the realization of Agriculture 4.0. In order to have a better strategy, it is important to know the existing ICT resources within the department. In line with this, please submit an inventory of ICT resources within your office using the attached form (ANNEX A-5: Existing Information & Communications Technology (ICT) Infrastructure Inventory). The deadline for the submission will be on **February 19, 2020**.

Submissions should be sent to usecg.dacentral@gmail.com and copy furnish ictpsd@da.gov.ph. For clarifications and inquiries, you may send it to the above mentioned email addresses.

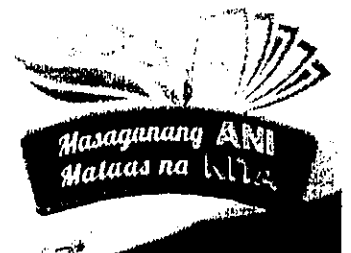
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Office of the Undersecretary for Administration and Finance
Department of Agriculture

A food-secure Philippines
with prosperous farmers and fishersfolk



0021-MEMO-14-47

ANNEX A-5: EXISTING INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT) INFRASTRUCTURE INVENTORY

AGENCY NAME: _____
Respondent (IS Planner/CIO/MIS Head) ¹ : _____
Position / Désignation: _____
Division/Section/Unit: _____
Telephone/Fax Number: _____
Respondent's Email Address: _____

Objectives:

- To identify the hardware, software, network and other ICT resources being used to manage information by National Government Agencies (NGAs), Government-owned and Controlled Corporations (GOCCs), State Colleges and Universities (SUCs), and Constitutional and Financial Autonomous Group (CFAG);
- To update existing benchmark and standards; and
- To provide inputs to the MITHI Steering Committee in determining the ICT budget requirements of the agency.

1. HARDWARE / OTHER ICT EQUIPMENT

Fill-out Instruction:

- Please count all existing computing devices and peripherals owned or leased by your office that are functioning including those acquired through projects. In case of multi-year contract for leased units, then just write the number of units under the appropriate year when the leased units were acquired. Do not include in succeeding years unless another batch was leased. **Reference year is last year.** Kindly replace "last year" and preceding years by the actual year number. For example, if last year is 2013, then write 2013 under the 1st column. For last 2 years, write 2012 and for last 3 years, write 2011.

1.1 Number of Computing Devices and Peripherals by Type and by Year Acquired

TYPES	TOTAL NUMBER OF FUNCTIONING UNITS BY YEAR ACQUIRED						
	<Last Year>		<Last 2 Years>		<Last 3 Years>		More than 3 years
	Owned	Leased	Owned	Leased	Owned	Leased	
Mainframe							
Servers							
Desktop PC							
Laptop / Notebook / Netbook PC							
Mobile Phone ² (incl. smart phones)							
Tablet PC							
Multi-function printer (print, copy, etc.)							
Printer only							
Digital Camera (Include DSLR, if any)							
Wide-format Printer or Plotter							
Small Scanner (ex. flatbed scanner)							
Smart Card Reader							
Wide-format Scanner							
External Hard Drive							
Generator Set							
Others, please specify (continue on a separate sheet if necessary)							

¹ In case all three positions are occupied by different persons, then the IS Planner should have priority in answering this survey.

² Count only the mobile phones owned or leased by your agency.

1.2 Number of Computing Devices and Peripherals by Usage

TYPES	Operations			General Administration and Support Services Support to Operations ³	Projects (Not agency-funded)
	Employees	Training	Frontline Services ⁴		
Servers					
Desktop PC					
Laptop / Notebook / Netbook PC					
Multi-function printer (print, copy, etc.)					
Printer only					

1.3 Number of Servers by Capacity and by Location

TOTAL CAPACITY OF HDD	LOCATION	
	IN-HOUSE	CO-LOCATED
Above 4 TB		
2 TB to 4 TB		
Below 2TB		

2. SOFTWARE, APPLICATION SYSTEMS, INFORMATION SYSTEMS AND DATABASES

2.1 Operating Systems

2.1.1 OS for Stand-alone PCs (desktops and laptops)

OPERATING SYSTEM	Lifetime License? ⁵	If not, write below the year of expiration
Older than Windows XP	<input type="checkbox"/>	
Windows XP	<input type="checkbox"/>	
Windows Vista	<input type="checkbox"/>	
Windows 7	<input type="checkbox"/>	
Windows 8 and up	<input type="checkbox"/>	
Linux	<input type="checkbox"/>	
Mac OS	<input type="checkbox"/>	
Mac OS X	<input type="checkbox"/>	
Others, please specify (continue on a separate sheet if necessary)	<input type="checkbox"/>	

2.1.2 OS for Workstations (desktops and laptops)

OPERATING SYSTEM	Lifetime License?	If not, write below the year of expiration
Older than Windows XP	<input type="checkbox"/>	
Windows NT	<input type="checkbox"/>	
Windows XP	<input type="checkbox"/>	
Windows Vista	<input type="checkbox"/>	
Windows 7	<input type="checkbox"/>	
Windows 8 and up	<input type="checkbox"/>	
Solaris	<input type="checkbox"/>	
Linux	<input type="checkbox"/>	
Mac OS	<input type="checkbox"/>	
Others, please specify (continue on a separate sheet if necessary)		

³ Those used in planning, coordination, internal training, monitoring and evaluation

⁴ Those used by external clients

⁵ Mark if yes. Examples are OEM license (software is already installed in the hardware) and Enterprise (Perpetual) license, which does not require renewal and is for life long. (source: <http://www.manageengine.com/products/service-desk/help/adminguide/configurations/software/software-license-type.html>)

2.1.3 OS for Servers

OPERATING SYSTEM	Lifetime License?	If not, write below the year of expiration
Windows NT	<input type="checkbox"/>	
Windows 2000	<input type="checkbox"/>	
Windows Server 2003	<input type="checkbox"/>	
Windows Server 2008	<input type="checkbox"/>	
Windows Server 2012	<input type="checkbox"/>	
Solaris	<input type="checkbox"/>	
OpenSolaris	<input type="checkbox"/>	
OS/2	<input type="checkbox"/>	
Linux	<input type="checkbox"/>	
Mac OS X Server	<input type="checkbox"/>	
Others, please specify (continue on a separate sheet if necessary)		

2.2 Office Automation Software

SOFTWARE / APPLICATION PACKAGE	Lifetime License?	If not, write below the year of expiration
Older than MS Office 2003	<input type="checkbox"/>	
MS Office 2003	<input type="checkbox"/>	
MS Office XP	<input type="checkbox"/>	
MS Office 2007	<input type="checkbox"/>	
MS Office 2010	<input type="checkbox"/>	
MS Visio	<input type="checkbox"/>	
MS Project	<input type="checkbox"/>	
Open Project	<input type="checkbox"/>	
Open Office	<input type="checkbox"/>	
Others, please specify (continue on a separate sheet if necessary)		

2.3 Operational⁶ Oversight / Administrative Systems (please refer to the examples⁷ below).

NAME OF SYSTEM (Please list down the name/s of your administrative system/s)	Own Intellectual Property, Y or N? ⁸	DEVELOPMENT PLATFORM (ex. LAMP, .NET, Java)	WORKING ENVIRONMENT ⁹ (Use codes below)	MAINTENANCE COST	USE ¹⁰ (Pls. write codes only; refer below)
(please continue on a separate sheet if necessary)					

⁶ Include only those currently being used by your office or agency.

⁷ Payroll System, 201 File Information and Promotion System, Vehicle Monitoring System, Document Tracking System, Attendance and Leave Monitoring System, Financial Management Information System, Inventory System, Records Management System

⁸ Write Y for Yes if your agency has intellectual property right to the system. Write N for No.

⁹ WORKING ENVIRONMENT: S - Stand alone; C - Client-Server; W - Web-based

¹⁰ USE: 1 - Public Financial Management; 2 - Citizen Frontline Services; 3 - Ease of Doing Business; 4 - Higher Education; 5 - Basic Education; 6 - Health; 7 - Justice, Peace and Order; 8 - Energy; 9 - Land and Other Geospatial Information; 10 - Disaster and Climate Change Management; 11 - Public Works and Transport; 12 - iGov and ICT Infrastructure; 13 - Transparency and Citizen's Participation; 14 - Citizen Registry; 15 - Others, please specify.

2.4 Operational¹¹ Strategic Information Systems (please refer to the examples¹² below).

NAME OF SYSTEM (Please list down the name/s of your strategic system/s)	Own Intellectual Property, Y or N? ¹³	DEVELOPMENT PLATFORM (ex. LAMP, .NET, Java)	WORKING ENVIRONMENT ¹⁴ (Use codes below)	MAINTENANCE COST	USE ¹⁵ (Pls. write codes only; refer below)
(please continue on a separate sheet if necessary)					

2.5 Databases (please include only existing databases)

NAME OF DATABASE	Own Intellectual Property, Y or N?	BRIEF DESCRIPTION AND KEY FIELDS ¹⁶	DATABASE MANAGEMENT SOFTWARE ¹⁷ USED	MAINTENANCE COST	USE (Pls. write codes only; refer below)
(please continue on a separate sheet if necessary)					

3. NETWORK

- 3.1 Does your agency have a Local Area Network (LAN)? YES NO
- 3.2 Does your agency have an Intranet? YES NO
- 3.3 If yes, does your agency have a Virtual Private Network (VPN)? YES NO
- 3.4 Does your agency have a Wide Area Network (WAN)? YES NO
- 3.5 Does your agency have a Private Automatic Branch Exchange (PABX or PBX)? YES NO
- 3.6 If yes, what is the PBX set up? Private Hosted VoIP PBX or IP-PBX Hosted IP
- 3.7 Is your agency connected to the Internet? YES NO
- 3.8 What is/are your agency's mode/s of access to the Internet? (Check all items that are applicable)
- Dial-up DSL ISDN
- Leased line Mobile phone Satellite
- WiFi Others, please specify _____
- 3.9 Who is (are) your Internet Service Provider(s)? If more than one, please state who is the primary and who is the secondary provider? _____

¹¹ Include only those currently being used by your office or agency.

¹² eCensus, Electronic Filing and Payment System, eTIN, Government e-Procurement System, Automated Customs Operations System, Electronic Customs Clearance Facility, Licensure Examination & Registration Integrated System, Machine Readable Passports and Visas, Philippine Land Registration and Information System, Government Employees Management Information System, e-GSIS, eReal Property Tax System, Business Permit & License System, iRegister, Hospital Operations and Management Information System

¹³ Write Y for Yes if your agency has intellectual property right to the database. Write N for No.

¹⁴ **WORKING ENVIRONMENT:** S - Stand alone; C - Client-Server; W - Web-based

¹⁵ **USE:** 1 - Public Financial Management; 2 - Citizen Frontline Services; 3 - Ease of Doing Business; 4 - Higher Education; 5 - Basic Education; 6 - Health; 7 - Justice, Peace and Order; 8 - Energy; 9 - Land and Other Geospatial Information; 10 - Disaster and Climate Change Management; 11 - Public Works and Transport; 12 - iGov and ICT Infrastructure; 13 - Transparency and Citizen's Participation; 14 - Citizen Registry; 15 - Others, please specify.

¹⁶ Briefly describe the purpose or importance of the database.

¹⁷ Examples of DBMS are MS Excel, MS Access, MS SQL Server, MySQL, IBM's DB2, Oracle SQL, Sybase SQL, Informix, FoxPro

- 3.10 What is the combined internet bandwidth (voice and data)? _____
- 3.11 How many employees have access to the Internet in the office? _____
- 3.12 How many employees have their own official e-mail address? _____
- 3.13 Does your agency have a web site? YES NO
- 3.14 If YES, what is the URL of your agency's web site? http:// _____

4. SECURITY, DISASTER RECOVERY & BACK-UP

- 4.1 Does your agency have a protection scheme for your ICT resources? YES NO
- 4.2 If YES, what is/are the measure/s being used by your office? (Check all applicable)
- | | |
|---|--|
| <input type="checkbox"/> Security Policy / Guideline | <input type="checkbox"/> Disaster Recovery Plan |
| <input type="checkbox"/> Back-up power unit (e.g. UPS, Generator) | <input type="checkbox"/> Digital signatures |
| <input type="checkbox"/> Encryption | <input type="checkbox"/> Off-site back-up |
| <input type="checkbox"/> Hardware firewall | <input type="checkbox"/> Physically restricted access to critical ICT equipment |
| <input type="checkbox"/> Software firewall | <input type="checkbox"/> Secure servers |
| <input type="checkbox"/> Subscription to a security service (e.g. anti-virus software, intrusion alert) | <input type="checkbox"/> Storage of back-up media in localities other than the operating environment |
| <input type="checkbox"/> Regular ICT security training of employees | <input type="checkbox"/> Others, please specify _____ |

5. DATA ARCHIVING

- 5.1 Does your agency have a data archiving system? YES NO
- 5.2 If yes, what type of data archiving system does your agency use?
- Manual Electronic Both/Combination
- 5.3 If electronic data archiving is being utilized, what is the mode?
- Conventional Cloud
- 5.4 If conventional mode, what is the medium of storage of the archived data?
- | | |
|---|--|
| <input type="checkbox"/> Optical disks (e.g. CD-Rom, DVD) | <input type="checkbox"/> Hard Disk |
| <input type="checkbox"/> Tape | <input type="checkbox"/> External Hard Drive |
| <input type="checkbox"/> Microfiche | <input type="checkbox"/> Diskette |
| <input type="checkbox"/> Others, please specify _____ | |
- 5.5 What information is archived by your agency electronically? (Check all items that are applicable)
- | | |
|--|---|
| <input type="checkbox"/> Publications (Annual Report, Statistical Report, etc.) | <input type="checkbox"/> Letters, memorandum orders, communications, etc. |
| <input type="checkbox"/> Audio-visual recordings | <input type="checkbox"/> Unprocessed/Raw Data |
| <input type="checkbox"/> Maps | <input type="checkbox"/> Photographs |
| <input type="checkbox"/> Public documents (civil registration forms, passports, land titles, etc.) | <input type="checkbox"/> Others, please specify _____ |

6. SPECIAL SOLUTIONS AND OTHER SERVICES

SPECIAL SOLUTIONS PACKAGE	USE ¹⁸ (Pls. write codes only; refer below)	MAINTENANCE COST
Geographic Information System		
Automated Fingerprint Identification System		
Cloud computing		
CCTV System		
Others, please specify		

7. DATA CENTER

¹⁸ USE: 1 – Public Financial Management; 2 – Citizen Frontline Services; 3 – Ease of Doing Business; 4 – Higher Education; 5 – Basic Education; 6 – Health; 7 – Justice, Peace and Order; 8 – Energy; 9 – Land and Other Geospatial Information; 10 – Disaster and Climate Change Management; 11 – Public Works and Transport; 12 – iGov and ICT Infrastructure; 13 – Transparency and Citizen's Participation; 14 – Citizen Registry; 15 – Others, please specify.

- 7.1 Does your agency have a data center? YES NO
- 7.2 If yes, how many sites? _____
- 7.3 Please check applicable maintenance set-up: In-house Outsourced
- 7.4 Does it have a back-up site? YES NO

8. ICT PROJECTS

8.1 Details of Ongoing ICT Projects

PROJECT NAME ¹⁹	DESCRIPTION	PERIOD (in mm/dd/yyyy)		COST ²⁰ (in pesos)	DEVELOPMENT STRATEGY ²¹ (Please write codes only; refer below)	STATUS ²² (Please write codes only; refer below)	USE ²³ (Pls. write codes only; refer below)
		Start Date	End Date				

8.2 Issues Encountered in the Implementation of ICT Projects

- | | |
|--|---|
| <input type="checkbox"/> No budget or insufficient budget | <input type="checkbox"/> Delay in the release of projects funds |
| <input type="checkbox"/> Opposition or reluctance of stakeholders | <input type="checkbox"/> Lack of support by management |
| <input type="checkbox"/> Difficulty in recruiting and/or retaining qualified ICT personnel | <input type="checkbox"/> Low level of ICT skills among employees |
| <input type="checkbox"/> Unavailability of required bandwidth to support system/s | <input type="checkbox"/> Not used or seldom used by intended users and/or clients |
| <input type="checkbox"/> Problems in contract management for outsourced services | <input type="checkbox"/> Problems in procurement |
| <input type="checkbox"/> Others, _____ | please specify _____ |

Please send accomplished questionnaire to:

MEDIUM-TERM INFORMATION AND COMMUNICATION TECHNOLOGY HARMONIZATION INITIATIVE (MITHI)

Department of Information and Communications Technology (DICT)
 Carlos P. Garcia Ave., UP Diliman, Quezon City 1101
 or email soft copy to secretariat@mithi.gov.ph

Call 920-7421 or 920-01-01 loc. 3912, 3901 for assistance.

Thank you for participating in the MITHI ICT Resources Inventory

Definition of Terms:

¹⁹ **PROJECT NAME:** In case an ICT project is divided in phases and its budget is given by phases, kindly list each phase as a separate project tagged as <Project Name> Ph. 1, <Project Name> Ph. 2, and so on.

²⁰ **COST:** For ICT projects and project phases that ended in 2013 or earlier, kindly provide the actual cost in pesos and not the proposed cost.

²¹ **DEVELOPMENT STRATEGY:** I – In-house; O – Outsourced; C – Combination

²² **STATUS:** U – Under Development; D – For Deployment; O - Operational

²³ **USE:** 1 – Public Financial Management; 2 – Citizen Frontline Services; 3 – Ease of Doing Business; 4 – Higher Education; 5 – Basic Education; 6 - Health; 7 – Justice, Peace and Order; 8 – Energy; 9 – Land and Other Geospatial Information; 10 – Disaster and Climate Change Management; 11 – Public Works and Transport; 12 – iGov and ICT Infrastructure; 13 – Transparency and Citizen's Participation; 14 – Citizen Registry; 15 – Others, please specify.

Archiving in general is a process that will ensure that information is preserved against technical obsolescence and physical damage. It will also help conserve very expensive resources and ensure that the research potential of the information is fully exploited. In the Philippine Statistical System (PSS), the adoption of archiving measures has been identified by the NSCB through Resolution No. 11 (s. 1997) as a key policy to ensure the preservation, systematic storage and retrieval of statistical data including records on their methodology, concepts and other metadata.²⁴

Automated Fingerprint Identification System (AFIS) is a biometric identification (ID) methodology that uses digital imaging technology to obtain, store, and analyze fingerprint data.²⁵

Cloud computing is the use of computing resources (hardware and software) that are delivered as a service over a network (typically the Internet).²⁶

Co-located is an arrangement wherein a space is provided for a customer's telecommunications equipment on the service provider's premises.²⁷

Computing devices include mainframes, minicomputers and microcomputers i.e. desktop personal computers (PCs), laptops PCs including notebooks and netbooks, and handheld devices like mobile phones including smart phones, Personal Digital Assistants (PDAs), palmtops, tablets and multimedia players.

Data Center is a centralized repository, either physical or virtual, for the storage, management, and dissemination of data and information organized around a particular body of knowledge or pertaining to a particular business.²⁸

Desktop PC is a PC that is not designed for portability and is expected to be set up in a permanent location.²⁹

Digital signature is an authentication code created with a sender's secret key and can be verified by a recipient using the sender's public key.³⁰

External hard drive is a hard drive that sits outside the main computer tower in its own enclosure. It allows the user to back up or store important information separate from the main internal hard drive, which could become compromised, damaged or corrupted.³¹

Firewall is a hardware, software or a combination of the two protecting a computer network from unauthorized access.

Geographic Information System (GIS) is a system of hardware and software used for storage, retrieval, mapping, and analysis of geographic data.³²

Intranet is "a private network that is contained within an enterprise. It may consist of many inter-linked LANs. The main purpose of an intranet is to share company information and computing resources among employees".³³

Laptop, also called a **notebook**, is a portable PC that integrates the display, keyboard, a pointing device or trackball, processor, memory and hard drive all in a battery-operated package slightly larger than an average hardcover book.³⁴

Local Area Network (LAN) is "a group of computers and associated devices that share a common communications line or wireless link and typically share the resources of a single processor or server within a small geographic area (for example, within an office building)".³⁵

Magnetic card reader is a device used to read magnetic stripe cards, such as credit cards.³⁶

Mainframe is an ultra high-performance computer made for high-volume, processor-intensive computing.³⁷

MICR reader is a device that can recognize human readable characters printed on documents such as cheques using a special magnetic ink. MICR stands for Magnetic Ink Character Recognition.³⁸

Microfiche is a sheet of microfilm (a film bearing a photographic record on a reduced scale of printed or other graphic matter) containing rows of microimages of pages of printed matters.³⁹

Mobile phone is a handheld or wearable device that may not only have call and short messaging service (SMS) functions but may be integrated with common computer applications (email, database, multimedia, calendar/scheduler).

Multimedia player combine the functions of a PDA with multimedia features, such as a digital camera, an MP3 player and a video player.⁴⁰ This does not include digital voice recorders that only play and record audio files.

Office automation software are ready-made or in-house developed software packages that support clerical and other common office tasks.

²⁴ ISSP Template Revised 2003 iib

²⁵ <http://searchsecurity.techtarget.com/definition/Automated-Fingerprint-Identification-System>

²⁶ http://en.wikipedia.org/wiki/Cloud_computing

²⁷ <http://searchsoa.techtarget.com/definition/collocation>

²⁸ <http://searchdatacenter.techtarget.com/definition/data-center>

²⁹ <http://computer.howstuffworks.com/10-types-of-computers.htm#page=2>

³⁰ http://linux.about.com/cs/linux_101/g/digital_signatu.htm?terms=Digital+signature

³¹ <http://www.wisegeek.com/what-is-an-external-hard-drive.htm>

³² <http://www.nwgis.com/gisdefn.htm>

³³ http://searchwebservices.techtarget.com/sDefinition/0,,sid26_gci212377,00.html

³⁴ <http://computer.howstuffworks.com/10-types-of-computers.htm#page=3>

³⁵ http://searchsmallbizit.techtarget.com/sDefinition/0,,sid44_gci212495,00.html

³⁶ http://en.wikipedia.org/wiki/Card_reader

³⁷ <http://www.techterms.com/definition/mainframe>

³⁸ <http://simple.wikipedia.org/wiki/MICR>

³⁹ <http://www.m-w.com/cgi-bin/dictionary?book=Dictionary&va=microfiche>

⁴⁰ <http://electronics.howstuffworks.com/gadgets/travel/pda1.htm>

Original equipment manufacturer (OEM) license covers software for stand-alone desktop PCs and laptops and **MUST** stay bundled with the computer system and **NOT** distributed as a separate (or stand-alone) product. This software will be identified or labeled "For Distribution Only With New Computer Hardware."⁴¹

Outsourcing is an arrangement in which one company provides services for another company that could also be or usually have been provided in-house.

Oversight or administrative systems are those application software that support development planning, fiscal and financial management and operations, auditing, personnel administration, and assets and supplies management.

PABX stands for private automatic branch exchange and is a telephone switching system used within a business or organization. It works by interconnecting telephone extensions to each other and to the outside public telephone network.⁴²

Palmtop, more commonly known as **Personal Digital Assistant (PDA)**, is a tightly integrated computer that often uses flash memory instead of a hard drive for storage. This computer usually does not have keyboards but rely on touch screen technology for user input. Palmtops are typically smaller than a paperback novel, very lightweight with a reasonable battery life.⁴³

Server is a computer that has been optimized to provide services to other computers over a network.⁴⁴

Smart card reader is an electronic device that reads smart cards and can be an external device or a built-in feature of a keyboard, PC or laptop.⁴⁵

Stand-alone PCs are independent computer units. They are **not** connected to any other PC or to the network and operate independently.

Strategic information systems are client-driven application software that support mission-critical operations and provide direct public access to government services.

Tablet is a mobile computer, larger than a mobile phone or personal digital assistant, integrated into a flat touch screen and primarily operated by touching the screen rather than using a physical keyboard. It often uses an onscreen virtual keyboard, a passive stylus pen, or a digital pen.⁴⁶

VOIP is an acronym for Voice Over Internet Protocol, or in more common terms phone service over the Internet.⁴⁷

Web site is your agency's presence on the Internet environment.

Wide Area Network is similar to a Local Area Network (LAN), but unlike LANs, WANs are not limited to a single location.⁴⁸

Workstations are categorized as PCs attached to an office network (usually a Local Area Network) to differentiate it from Stand-alone PCs.

⁴¹ <http://www.auditnet.org/articles/softwarelicenses.htm#What%20Types>

⁴² http://www.ehow.com/facts_7267523_definition-pabx.html

⁴³ <http://computer.howstuffworks.com/10-types-of-computers.htm#page=5>

⁴⁴ <http://computer.howstuffworks.com/10-types-of-computers.htm#page=7>

⁴⁵ http://en.wikipedia.org/wiki/Card_reader

⁴⁶ <http://mashable.com/follow/topics/tablets>

⁴⁷ <http://www.voip-info.org/wiki/view/What+is+VOIP>

⁴⁸ <http://www.techterms.com/definition/wan>