

A Revision guide for the exam element of the TLM Certificate in Open Systems and Enterprise qualification. This revision guide is based on Annex B of the TLM handbook. Further research should be carried out to expand your knowledge. The guide is made available with the Creative Commons License below. You may share, but please give me credit. Please do not try and make money from this resource. It is intended to help others.

ICT revision guide

TLM Exam preparation

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Revision Notes

Audience of our work:

1. Making your work suitable for a particular audience. Examples from the Think Click project.
2. Reaching a global audience and how World Wide Web technologies can achieve this. E.g. Web forms to survey large groups of people.

ICT increases productivity. Increased productivity means more work produced in the same amount of time.

IT Considerations for people with disabilities:

1. Knowing that people with disabilities need special consideration.
2. Choosing colours that will not cause problems for people with colour blindness.
3. Text alternatives for graphics to enable blind people to know what is being displayed.
4. Subtitles for videos for deaf people.

Eportfolio:

For example your Think Click Eportfolio; allowing the examiner to see the quality of your work simply by knowing the URL.

You could do this for other subjects such as Science, History and Geography.

Translation Tools

Advantage - Can be used to communicate with someone in a different country.

Disadvantage - Translations can be unreliable and inaccurate.

For example; google translate

Wiki Pages

Public web page (Wiki) allows people to collaborate on a community project.

Making it easy for other people to contribute and make the results easy to link to other similar sites.

Advantages of Wikis

1. Anyone can edit
2. Easy to use and learn
3. Published instantly

Disadvantages of Wikis

1. Anyone can edit - potential for inappropriate content
2. Anyone can edit - potential for inaccurate information
3. Every contributor must have good internet connectivity

Writing formally compared to writing informally in IT environments.

Why write formally?

"To create a professional image of yourself."

Examples of formal writing using the web:

1. In a web page e-portfolio which could be seen by future Employers, College or University Tutors.
2. Creating notes on a subject so they are accessible to friends from any location. May include hyperlinks.
3. Using on-line publishing services for formally written texts. E.g. <http://www.lulu.com>

Informal writing examples

1. SMS conversations.
2. Chat and instant messaging of friends using slang to communicate meaning.
3. Many people using English discussion groups and mailing lists are not native English speakers.
4. Social media sites.

Appropriate use of Email

1. Checking recipients are correct. E.g. Make sure replies are only sent to people that need them.
2. Not using automated replies on mailing list e.g. "I'm out of the office" and why.
3. "Spam" - knowing not to contribute to it. E.g. by making your e-mail address public in a web page or replying to it.

Examples of increasing productivity with common software.

1. Word processing makes redrafting more efficient.
2. Collaborative technologies enable sharing documents and concurrent editing.
3. A spreadsheet enables mathematical models.
4. Web forms to collect large volumes of data.
5. Vector design programs produce drawings that can be scaled almost infinitely without loss of quality or increasing the size of the files.
6. Use of web browsers to provide and enable creation of information all over the world.
7. Text messages enable low cost asynchronous communication.
8. Automating tasks for example writing Macros to carry out repetitive tasks.

Security and safety when working online.

Name your file	Name files appropriately. E.g. Document1 means you will never find it again.
File sizes.	Bit>Nibble>Bytes>Kilobytes>Megabytes>Gigabytes.
Get organised	Folders are used to organise files. Help you and others find files.
Swap shop	<ol style="list-style-type: none"> 1. Use import to put information into a file 2. Use export to take information out of a file 3. Export means save as. E.g. Save .doc as .pdf for sharing.
Good passwords	Combinations of numbers, symbols, uppercase and lowercase text make the best passwords.
Trust no one	People on the internet should not be trusted without good and independent verification of their identity.
Digital footprint	Simple internet searches can reveal a lot about you and other people.
Lock before you leave	Knowing that leaving your computer without logging out is a very significant security breach in a school, college, university or business.
Scams	You can give examples of common internet scams. You need to research at least 3.
IS this biased?	Many people providing information online have a commercial interest. E.g. You can pay google to come top of web searches.

Examples of how to presenting information to improve productivity

For a general audience	Presenting information to a general audience, using web pages is the best option as information can be updated instantly.
For face to face meetings	Desktop presentation software is better if there is a need for visual effects to a static audience. E.g. in a meeting or classroom.
Emails make life difficult	E-mailing files as attachments makes file management difficult.
Cloud = collaborate	Cloud storage allows central storage and collaborative working.
Share with a URL	Giving an audience the URL (web address) of information means all they have to do is book mark it.
Don't "P" online	Avoiding proprietary software online makes information more accessible to more people. Your audience won't need a proprietary license.

File Type	Software type	Proprietary / Open standard
.avi	Video format	Proprietary (Microsoft)
.ogg	Video format	Open standard
.eps	Image format	Proprietary (Adobe)
.gif	Image format	Proprietary (CompuServe)
.svg	Vector Image	Open standard
.png	Image format	Open standard
.jpg	Image format	Open standard
.mp4	Video format	Open standard
.psd	Image file	Proprietary (Adobe Photoshop)
.rtf	Text document	Proprietary (Microsoft)
.zip	Compressed file	Open standard
.txt	Text document	Open standard
.exe	Windows based application or program	Proprietary (Microsoft)
.flv	Video format	Proprietary (Adobe)
.wmf	Image file	Proprietary (Microsoft)
.mov	Video format	Proprietary (Apple)
.mpg	Video format	Open standard
.mp3	Audio format	Open standard
.wav	Audio format	Proprietary (Microsoft)
.odp	Presentation format	Open standard
.ods	Spreadsheet	Open standard
.odt	Text format	Open standard
.html	Hyper Text Markup language (Webpage)	Open standard
.pdf	Text format	Open standard
.ppt	Presentation format	Proprietary (Microsoft)
.pptx	Presentation format	Proprietary (Microsoft)
.doc	Text format	Proprietary (Microsoft)
.docx	Text format	Proprietary (Microsoft)
.xls	Spreadsheet	Proprietary (Microsoft)
.xlsx	Spreadsheet	Proprietary (Microsoft)





Describe the relationship between copyright and licensing.

Copyright protected material

Purpose	Protects the original creator of the material e.g. text, film, images, software and audio.
The Law	In the UK Copyright, Designs and Patents Act (1988).
Money	Proprietary software requires a license to use (often purchased). Intention is to protect the work by the developer.
Automatic	By default a material remains protected for 70 years after the persons death.
Be careful on your holidays	Laws vary around the world.

Creative Commons Licensing

1. Not the same as copyright! Very important and do not confuse them.
2. Owner sets the license applied to their work.
3. Gives greater control and flexibility compared to copyright.
4. A range of licenses are available

Icon	Right	Description
	Attribution (BY)	You may copy, distribute, display and perform the material and make other work based on it only if you give the author or licensor the credit .
	Share-alike (SA)	You can add to the work. However you must share this piece of work with exactly the same.
	Non-commercial (NC)	You may copy, distribute, display, and perform the work and make other work based on it, only for non-commercial purposes .
	No Derivative Works (ND)	You may only copy, distribute, display and perform only exact copies of the work. Cannot add to the work.

Source: https://en.wikipedia.org/wiki/Creative_Commons_license

Public Domain

Public domain means no one owns or controls the material in any way. Work that is in the **public domain** in one country are not necessarily in the **public domain** worldwide.






Royalty Free

This means the right to use copyrighted material without the need to pay royalties or license fees. Often images bought on the internet become royalty free once a fee is paid.

Digital Rights Management e.g. BBC iplayer

1. Digital Rights Management or DRM is a way of protecting files like TV programmes from being copied.
2. It works automatically whenever you download a programme from the internet.
3. You can borrow things whenever you like.
4. After a certain amount of time, usually about 30 days, the programme will be deleted from your computer.
5. Gives copyright owner increased control over their content.

Computer Hardware

CPU- Central Processing Unit	
 Two Intel Core i7 CPUs are shown. One is a standard LGA package with a white heat spreader and the Intel logo, and the other is a BGA package with a green solder mask.	Fetches - Executes all instructions in computer programs.
RAM - Random Access Memory	
 Several RAM modules are shown, including DDR3 and DDR4 types, with various heat spreaders and colors.	Where instructions and data are stored when the computer is running.
Graphics card	
 An AMD graphics card is shown, featuring a black PCB with red accents and a circular fan on top.	The part of the computer that controls the output to the monitor. A common upgrade for gaming computers.
GPU - Graphics Processing Unit	
 An NVIDIA GPU chip is shown, with the NVIDIA logo and 'GEMINIX' branding visible on the green PCB.	Part of the graphics card that manages how the graphics card works.
Hard drive	
 A hard drive is shown, with its metal casing partially open, revealing the internal platters and read/write head.	Part of the computer that stores all the operating system, programs, applications and data.

Software licenses

Custom written (a.k.a. bespoke)	Developed specifically for a user or business. Advantages: Specific to task. Disadvantages: Very expensive and time consuming to develop.
Off-the-shelf	Developed by a software company to be sold to the general public. Advantage: Cheaper than custom written software yourself and technical support normally available. Disadvantage: May contain many features which are never used.
Open Source	Written by a community of developers. Advantages: Can tweak software to suit your needs. Collaborative approach can lead to better software. Disadvantage: Support is often from a community of developers which can be frustrating to get a resolution specific to you.
Proprietary	Allowed to use under certain conditions. E.g. purchase of a license. Advantage: Support is normally well supported and training available. Disadvantage: Source code is hidden and tinkering will break license agreement. Sharing files is difficult as each reader needs a copy of license.

Ideas to save costs when using IT software.

Put it on the web	Putting information directly into web pages makes it available to anyone with a web browser.
You have a choice of web browsers	There are open source, free web browsers on free, open source operating systems.
Share openly	When sharing information make sure it is shared using open standards.
Never publish proprietary images	Images should be published using open standards to avoid users buying unnecessary proprietary software. Corel draw (.cdr) and Adobe photoshop (.psd) are examples of proprietary photo editing software.

FOSS - Free and Open Source Software

Open software - Libre Office, Open Office

Free to use software - Google Apps, Google Docs

GPL (General Public License) - Applied when people write open source applications and do not want people to make proprietary software from it.

Cost with making IT purchases.

Direct Costs - Includes software licenses, technical support to install the application.

Indirect Costs - Includes the hardware to run the application, need for other associated applications e.g. anti-virus software, maintenance, mandatory upgrades that cost additional fees, technical support, training on new systems.

Smart Targets

- **Specific**
- **Measurable**
- **Attainable**
- **Relevant**
- **Time-limited**

Examples of making different software choices.

1. Using Inkscape as a design tool because it is free and is available on 3 major desktop platforms.
2. Use MS Word is only one example of word processed documents. Google docs, Libre Office and Open Office.
3. Use Google Docs files excellent for collaborating can be used by several people in different places at the same time.
4. Using Portable Apps because they can be run from a USB key without having to install anything on the computer.
5. Use a content management system because it is easy to generate and edit web pages making them available to a wide audience.

Key aspects of local AUP's (Acceptable Use Policy) and their purpose.

1. **Not** sharing passwords
2. Being polite to other people in social/collaborative networks
3. Not attempting to hack into the system or use other people's accounts.
4. No bullying.

Reasons for AUP's can include privacy, accountability, technical security against malware and general good manners.

The Law

1998 Data Protection Act

The Eight Principles of Data Protection

- It must be collected and used fairly and inside the law.
- It must only be held and used for the reasons given to the Information Commissioner.
- It can only be used for those registered purposes
- The information held must be adequate, relevant and not excessive
- It must be accurate and be kept up to date.
- It must not be kept longer than is necessary
- The information must be kept safe and secure.
- The files may not be transferred outside of the EU

The Computer Misuse Act

This was passed by Parliament and made three new offences:

- Accessing computer material without permission, eg looking at someone else's files.
- Accessing computer material without permission with intent to commit further criminal offences, eg hacking into the bank's computer and wanting to increase the amount in your account.
- Altering computer data without permission, eg writing a virus to destroy someone else's data, or actually changing the money in an account.

Types of computer misuse

Misuse of computers and communications systems comes in several forms:

- Hacking
- Data misuse and unauthorised transfer or copying
- Copying and distributing copyrighted software, music and film
- Email and chat room abuses
- Pornography
- Identity and financial abuses
- Viruses

Freedom of Information Act 2000

The Freedom of Information Act 2000 provides public access to information held by public authorities.

It does this in two ways:

- Public authorities are obliged to publish certain information about their activities; and
- Members of the public are entitled to request information from public authorities.

In summary it gives UK citizens the right to know what information is held about the by government departments such as Departments of Education and Health.

Source: [Information Commissioner's office](#)

Computer virus

A computer program designed to cause deliberate damage to a computer.

Main ways to infect a computer;

- Attachment in an email
- Download from the WWW

Help avoid virus infections;

- Keep operating system updated
- Make sure anti-virus software is updated
- Only open attachments which you are expecting
- Never open .exe attachments
- Scan memory sticks when switching computers
- Only download from trusted websites
- Disable Macros in office applications

Cloud Computing

Cloud Computing is where applications and data are stored on a remote location on the internet. A few examples of Cloud Computing.

- Google Apps
- Google Docs
- Microsoft Office 365
- Dropbox

Advantages to Business

- Save costs on technical support
- Pay less for hardware and ongoing maintenance e.g. no need for servers
- Employees can access applications and data from any internet device
- Excellent for sharing across the world

Disadvantages to Business

- Depends on a reliable internet connection
- Need a spare (Failover) internet connection (more expensive)
- Editing video and large images is generally very slow using the cloud

Advantages of Cloud Computing	Disadvantages of Cloud Computing
Cost Savings	Need reliable internet connection
Reliability	Possible security attacks
Automatic Backups	Vendor Lock-In
Independence - Work anywhere	Limited Control
	Costs for storage can become expensive

Schools and Cloud computing

Before changing to Cloud	After changing to Cloud
Schools spend a lot of money on technicians, licensing, electricity and replacing servers.	Change to cloud means no servers in school (saves electricity) and need to employ fewer IT Technicians.
Staff and students understand how to use network and software.	A large amount of time needed to train staff and students on using the new cloud based system.

Global communication

Services such as Skype, Google Hangouts and Facetime are known as video conferencing. These can save lots of money.

E.g. A Company has offices in England and Brazil. Rather than flying to Brazil employees can communicate face to face using web conferencing.

Do not have to pay phone charges, uses internet connection.

If used with cloud computing data and applications could also be shared.

Internet Connection Types:

Name	Speed	Description
3G	Mobile internet connection	Slower than 4G Greater coverage than 4G
4G	Mobile internet connection	Faster than 3G Good coverage limited to big cities
Mobile WiFi Access Point	Uses 3G and 4G	Can share up to 5 devices Pay monthly fee
Mobile Dongle	Plugs into computer or laptop	Access 3G and 4G mobile networks Good for travelling employees
Broadband cable	Fastest connection type	Can be shared by 100's or users Reliable downloads Best for Cloud Computing

Data Storage

Name	Description
Bit	Single 1 or 0
Byte	8 Bits
Kilobyte	1024 Bytes
Megabyte	1024 Kilobytes
Gigabyte	1024 Megabytes
Terabyte	1024 Gigabytes

Content Management System

Often known as CMS.

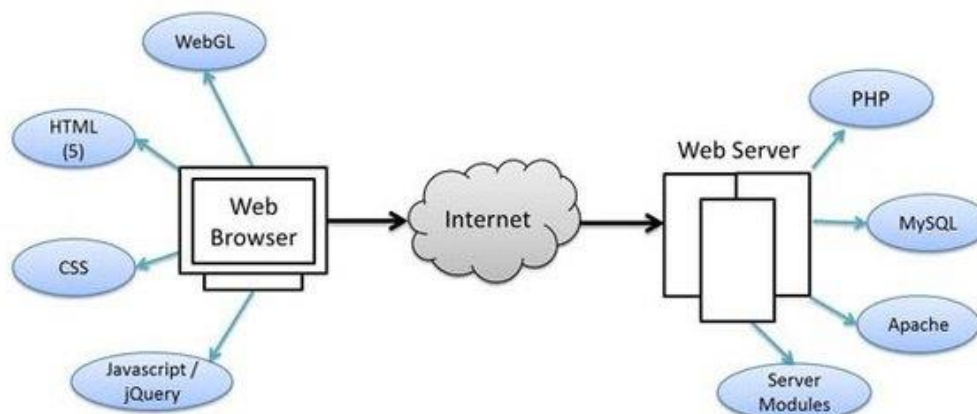
A system that allows publishing, editing and modifying content. Often the content is published on the World Wide Web.

World Wide Web Glossary

Term	Definition
URL	Uniform Resource Locator. http://www.bbc.co.uk is an example
http	Hypertext transfer protocol. Rules for sending and receiving websites.
Internet	Global network of computers.
WWW	World Wide Web collection of websites accessed using the internet.
Web browser	Application which allows viewing of webpages.
DNS	Domain Name Service(Or Server) which converts domain names into IP addresses and vice versa
Client-Server	A network which is managed by a powerful computer called a server. Information on the server is accessed using clients.
P2P	Peer to Peer network. No computer has overall control. Files would be shared between each client.
Router	Hardware device which connects networks together. E.g. At home you will have a router to connect your house to the internet.
MBps	Megabytes per second. Measurement of data transfer.
Mbps	Megabits per second. Measurement of data transfer.
Often internet speeds are advertised as Mbps not MBps. They are very different.	
Megabit per second Megabyte per second	
1 Mbps 0.125 MB/s	
2 Mbps 0.25 MB/s	
3 Mbps 0.375 MB/s	
4 Mbps 0.5 MB/s	

Image Type	Advantages	Disadvantages
Bmp	<ul style="list-style-type: none"> • Well supported in older software. • High range of colours. 	<ul style="list-style-type: none"> • Very large file size. • No compression. • No transparency.
Gif	<ul style="list-style-type: none"> • Can be used to animate. • Animation supported in most web browsers. • Supports transparency. • Lossless compression. 	<ul style="list-style-type: none"> • Limited colour range 256.
Jpeg	<ul style="list-style-type: none"> • Over 1 million colours supported. • Best for photography. 	<ul style="list-style-type: none"> • No transparency. • No animation. • Lossy compression.
Png	<ul style="list-style-type: none"> • High range of colours. • Supported by most web browsers. • Best for web graphics. • Supports transparency. • Lossless compression. 	<ul style="list-style-type: none"> • Png transparency is not supported in older web browsers. • Only firefox supports animation in png files.
Svg	<ul style="list-style-type: none"> • Can be scaled larger or smaller • No pixels based on code - File sizes are small • Easily converted to other formats 	<ul style="list-style-type: none"> • Not familiar to most people

Web Technologies



Server side tools run on the web server.

Client side tools are used through a web browser. Examples of clients are; Computers, Laptops, smart phones and tablets.

Web server side applications	Description
SQL Structured Query Language	SQL allows the creation and management of databases stored on a web server. Examples such as; storing user details, stock control, online shop details.
Php PHP: Hypertext Preprocessor	Php is used for server side scripting. For example some schools use moodle for a VLE. This is built using php scripts. Php is an open source framework.
Asp Active server pages	Developed by Microsoft. The framework is open source. It is used to make web applications with little programming knowledge. It is free to use.
Apache Server	An open source web server tool which manages the hosting of websites.
IIS Server	Microsoft's web server tool which manages the hosting of websites. This is a proprietary product.

Client side applications	Description
Javascript	Used for developing interactive content in websites. Allows information to change automatically.
JQUERY	A set of tools to help less experienced programmers design websites using javascript.
HTML Hyper Text Markup Language	An open standard of web design. HTML5 is the most recent standard and supports animation, removing the need for proprietary plugins such as flash player.
CSS Cascaded Style Sheets	CSS compliments HTML and helps to define and manage styles. Similar to styles in word processors or presentation software.
WebGL	Based on javascript a set of tools for designing 3D and 2D graphics to be used in webpages.
XML EXtensible Markup Language	Used to transfer data between computers and displaying data in webpages.

Web Open Standards

1. HTML5 open standard for web design and includes video playback.
2. Svg, jpg and png are open standard image types.
3. .pdf for document sharing online and consistent printing.

Common Web Proprietary file types

1. .psd common proprietary image file type. (Adobe Photoshop).
2. .cdr proprietary image file type. (Corel Draw).
3. .flv common proprietary video file type. (Adobe Flash video).
4. .wma common audio file type. (Windows Media audio).

HTML5

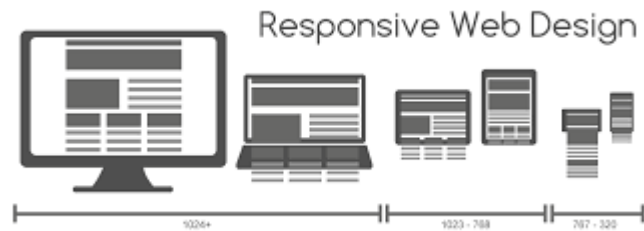
1. A new open standard for web design.
2. Importantly HTML5 supports **audio and video**.

3. HTML5 pages do not need users to install proprietary players such as Flash Player.

Responsive Web design

A technique which makes sure your website looks perfect on any device.

Responsive design makes use of the "viewport" metadata.



Source: https://www.w3schools.com/html/html_responsive.asp

Responsive Images

These images will scale automatically to the browser size in use. A vital part of Responsive web design.

