Section 1 – Overview

ASYCUDA++ Functional Manual

V1.15

Section 1

Introduction to ASYCUDA++

Functions and Use of the ASYCUDA++ Customs Computer System; Safety Guidelines for the Use of Computers.

Contents of Section 1.

Amendment Control Grid

Periodically, amendments to this Reference Document will be issued. Each amendment batch will be serially numbered and dated. This Amendment Control Grid is provided in order to maintain a record of the receipt and incorporation of amendments into the Reference Document and thereby ensure that it is kept fully up to date.

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About this Section

This Section introduces the new user to the ASYCUDA++ software. The ASYCUDA++ Customs Computer System is usually introduced into a country as a component of a Project with the overall aim of improving trade efficiency through measures that include reforms of existing administrative practices.

Part 1 of this Section describes the core training courses developed by UNCTAD to prepare National Project staff for the task of setting up the ASYCUDA++ software to meet National needs.

Part 2 gives an overview of the ASYCUDA++ system. This starts with a brief history of UNCTAD's development of ASYCUDA, and then outlines the principle features of the system and provides in the very broadest terms a description of the technology upon which the ASYCUDA++ software is built. This part is best regarded as being included for general interest only. Non-technical readers are assured that where users encounter practical applications of the technology for a specific task, the task will be explained in detail and in the context in which it occurs. The software that makes up the ASYCUDA++ system is structured into task-orientated modules – this section lists them and gives a very brief description of the functions of these modules.

Part 3 advises on "Health and Safety" Guidelines. It introduces physical factors that are very important when considering the design of offices and the purchase or fitting of computer equipment and office furniture. Close attention to these issues can greatly benefit the efficiency and productivity of the automated office as well as making the working conditions of the users comfortable and productive.

ASYCUDA++ Training

Support to ASYCUDA++ Projects includes a series of training courses, developed by UNCTAD. These courses are designed to pass on skills to the project staff, to allow them to set up the core ASYCUDA++ system, to meet the needs of their country and their National Customs procedures. Courses are broadly categorised as 'Technical', 'Functional' and 'Management'.

The standard courses are grouped as follows:

Core implementation courses:

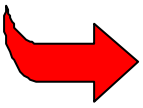
- Foundation Course (Technical);
- Foundation Course (Functional);
- Advanced Courses (Technical and Functional);
- Specialised Technical Training.

User Training Courses:

- Supervisor and Systems Manager Training;
- Data Entry Operator Training;
- Declaration Processing (including amendment, post entry, selectivity controls);
- Cashier and Accounts Training.

Complimentary training (optional):

- Trainer Skills training;
- Risk analysis and targeting using Selectivity.



While this Reference Document covers mainly the 'Functional' aspects for the initial set up and maintenance of the ASYCUDA++ System, it can also be used as a reference source for User training and for the use of risk controls managed through Selectivity.

'Technical' is defined as the installation of the UNIX operating system and the ASYCUDA++ database engine, (e.g. 'Informix' or 'Oracle'). It also includes the installation of the computer network, (the hardware and software), and communications. See the Technical Documentation for details.

Functional Training

Functional Training covers all aspects of ASYCUDA++, from the basic level of input of Declarations to the advanced level of configuring the system to meet the exact needs of your country.

Course Overview

The Functional Training event is usually given after the commencement of the project, following the completion of mobilisation activities and after the Technical Foundation Course. It is normally given in English as the base language, using interpreters as necessary.

It is designed for those Project staff (Customs and IT) responsible for building, installing and maintaining the system. This course is critical to the on-going stability of the software and the ability to respond to the necessary legal, fiscal and administrative changes.

The Functional Foundation event is intended to illustrate how the Taxation system, the National Tariff, Reference Data tables and associated manual systems work and to teach participants how to set up, operate and implement the ASYCUDA++ Computerised Customs system.

Target Population

The training is initially for Project managers and the staff of the Project team. These are the people who will set up and implement ASYCUDA++ with internal and external ADP experts and Customs advisors. Subsequent training is aimed at regional and local managers from the Customs Service who will be associated with the ASYCUDA++ implementation at the pilot sites.

Participants should have a sound working knowledge of their country's import and export procedures and be familiar with all aspects of their National Tariff. Previous experience in using a computer would be an advantage, but is not essential. The necessary computing skills will be taught, if required, during the course.

Course Format

It is normally based on an informal lecture and training workshop structure in a participative forum.

The ASYCUDA++ System used for the Functional training is fully functional but uses a simplified version of the database tables. The tables used for training contain data that fully conforms to the United Nations Trade Data Element Directory codes. The course is structured around a series of inter-related computer based exercises that reinforce the theoretical lectures and explanations of the various system modules. Participants build the databases as a product of these exercises as each one is completed.

It is validated by the successful completion of a demanding case study exercise of one or two day's duration at the end of the training course. This case study involves the creation of a working system for the country concerned, which contains the main elements of the country's tables and tariff.

Course Objectives

Following the course the participants will be able to:

1. Configure and process the Single Administrative Document (SAD) using Customs procedures, e.g. import, export, warehousing, and operate the accounting functions of the system;
2. Use all of the available ASYCUDA++ applications;
3. Define the procedures and tables;
4. Set up the National Tariff and program the necessary taxation rules to enable the system to function;
5. Obtain trade statistics and management information using report functions and SQL interface.
6. Set up the access controls on the system.

Duration

The normal duration of the course is three weeks. Exceptionally the duration of the event may be extended for special circumstances.

Instructors

The course instructors are members of a carefully selected panel of experienced Customs training officers from various countries. They have a wealth of practical experience of Customs processing and procedures, Customs computerisation and a detailed knowledge of the ASYCUDA++ system.

ASYCUDA++ System Overview

ASYCUDA++++ is a complete departure from the original version, (ASYCUDA Version 2), in that it provides the user with the facility to deal with the everyday tasks of international trade data processing within a user-friendly environment.

For the initial functional set up, ASYCUDA++ is more user friendly than previous versions. It is also easier to maintain the system and for countries to develop their own applications which can be interfaced with ASYCUDA++.

Although it is more user friendly on the functional side, ASYCUDA++ uses more complex technology and so has a greater technical 'overhead' than ASYCUDA Version 2.

The system architecture requires that the country, (particularly the Project's technical staff), have high skill levels. In particular, technical staff must be skilled at working in a UNIX environment and with a TCP/IP network.

The Evolution of ASYCUDA

To understand the full potential of the software it is important to examine its origins, and the reasoning behind its current appearance.

The original ASYCUDA software was developed by UNCTAD in response to needs established during a proposed trade liberalisation program. The preliminary finding was that reliable trade data statistics were essential to the establishment of a successful liberalisation program. The conclusion reached was that the most reliable trade data statistics would be those captured on Customs declarations for Imports and Exports. The original version of ASYCUDA was designed to provide this facility.

Since the early 1980's the requirements for the system and from the Customs administrations involved in the project has mushroomed, and ASYCUDA in all it's forms, is currently operational, or being implemented, in over 50 countries worldwide. The latest release of ASYCUDA (Version 2, release number 2.7), bears little resemblance to the original release, with current functionality extended to provide Selectivity, extraction of data for external manipulation, and the introduction of Warehousing and Licensing modules.

With the arrival of more powerful Personal Computers, and a demand for the system to process greater volumes of data, it became apparent that the original system would benefit from a new approach to file structures and design methodology. The choice of software was a further problem and this decision was guided by the evolution in the IT industry at the time of the conception of the new version.

PCs were able to cope with the processing requirements of the countries targeted for the new version, and so the main area of concern was the correct type of hardware configuration. After consideration of the three main options, large server with dumb terminals, the PC Local Area Network and the Client Server configuration, it was decided that the Client Server configuration offered the maximum flexibility.

The Client Server approach

The Client Server approach is designed to have processing functionality at both the Client PC (local) and at the remote Central Processing Unit (CPU). This ensures fast response to query commands and integrity of data where database updates are necessary, and every computer on the network performs the task for which it is best suited.

Whilst many systems are designed on a Client Server model, the ASYCUDA++ system embraces the concept at its most fundamental level.

Advantages

Ease of use

Many users are already familiar with the DOS environment. The availability of DOS machines to run applications external to ASYCUDA++ is an additional bonus and the possibility for linking data across several networks gives additional flexibility.

Availability of "off the shelf" software

The software being used within ASYCUDA++ is all generally available and well documented. Upgrades are well supported and tested. As these applications often use a standard approach to their data presentation, function keys and report facilities the user becomes quickly familiar with what is also presented in the ASYCUDA++ screens.

Excellent connectivity

UNIX and DOS/Windows® machines have an excellent history of connectivity. They work under a multitude of network protocols which can coexist with no problems therefore the possibility of using the same machines to run different communications based applications is both practical and easy.

Groundwork for multimedia technology

With modern communication and business requirements based around the high-speed modem, the Wide Area Network (WAN), professional desktop publishing and graphical rather than written presentation, the PC compatible machine is a necessity in every office.

Graphical User Interface (GUI)

As the PC has it's own memory and processor, it can provide the user with a far more powerful graphical user interface than the traditional dumb terminal screen painter. Again, because it is independent of the server processor for much of the time, this does not adversely effect other system users.

Access to large databases

This is the main advantage that the Client Server has over the traditional File Server approach. By using the Client PC workstation for the maximum manipulation of substantial amounts of data, it makes the Client Server particularly suited to the ASYCUDA++ software.

Where data must be manipulated in a complex manner it is down loaded to the Client and is processed there. This ensures that the other Client PCs using the server are not affected adversely.

Fast database processing response times

As a consequence of this lesser reliance on the server, the server itself can rapidly respond to each Client PC, as the majority of people connected will normally be working on transaction and reference tables on their Client machines. Using the Server – Client system the server is capable of hosting significantly higher numbers of Client connections than would be possible if it was serving dumb terminals.

Processing performed on server, means that client can perform other tasks locally.

When the user sends data for processing on the server he frees up his Client PC processor for further transactions that can be carried out at a local level.

Ease of upgrading storage and processing capacity

The ease with which Personal Computer storage capacity can be increased is well known. Individual Client machines on the network can be isolated and upgraded without interruption to the processing of other Client PCs, which is a significant saving in terms of potential down time over the more problematic Server/Dumb terminal configuration.

The ASYCUDA++ Client-Server environment

Communication between the client and server takes place in a transparent fashion using ASYCUDA++ that in turn relies upon TCP/IP. The user is never aware that he is accessing remote data once he has performed the initial login to the server. As server-processing power is reserved solely for database administration, response time is in not normally delayed by any external access.

The ASYCUDA++ Client

Within the ASYCUDA++ framework, each user has his own PC (Client) with which he may, when necessary, log into ASYCUDA++. The PC is loaded with the ASYCUDA++ client software and the user, when logged in to the server, is presented with the ASYCUDA++ menu screens and functions, many of which can be used without any need to log in to the server.

Operating System

The advantages of the DOS/Windows® environment have been elaborated above. Suffice to say that as the most popular operating system in the world its selection was self-evident. This is not to say however that DOS is necessary for the running of ASYCUDA++, it is possible to change the operating system to Windows® at a later stage if desired.

PARADOX Database Management System

PARADOX is one of the better-known database management tools available under DOS/Windows®. In basic on-line mode it is extremely user friendly with its QBE (Query by Example) screens, its extensive reporting facilities and the ease with which its data can be exported for use in other applications. As the development of software under the PARADOX engine carries no charges, there are none to pass on to the user countries. This consideration may be useful for those considering developing their own applications using the same environment.

Borland SQL Interface

The ASYCUDA++ software is written in such a way that the user interface and local Engine modules refer to the BORLAND provided SQL interface rather than embedding SQL statements directly in the program code. It is this interface that interacts with the PARADOX database, and it is only this layer of the system that would need to be changed if another interface replaced the database beneath it.

Local Engine

To avoid unnecessary access to the network, the system reference or "control" files are automatically updated on the Client PCs so that much interim validation can be carried out at a local level. It is only when ASYCUDA++ transaction files are to be updated that connection to the network is necessary and final validation is carried out against the master database. This means that the users have the facility to create or capture data using local database files rather than competing for time on the server.

For external applications interfacing with ASYCUDA++ the down loading of reference data to the local machines is interesting. This indicates that additional applications can, if required, access and update the ASYCUDA++ databases resident in DOS/Windows®.

User Interface

The user is presented with input screens with icons, pull down menus and multiple level screens that will be familiar to any user of Windows®. Movement around the screens is facilitated with the use of a mouse, cursor keys, fast-path commands or function keys. The system is provided with a help facility that can be written in country and updated with ease.

Should the user wish to access data held on the server then he needs only to request login to the server and enter a valid user name and password. The requests are evaluated and passed on to the system message handler. The majority of people using the system will be totally unaware that they are using the network or another machine.

If the user wishes to update data on his local database, the request is received, evaluated and passed on to the local engine for further manipulation. The user interface is totally divorced from the database used. Were the ASYCUDA++ platform to change, the modifications necessary at the user interface level would be minimal.

Message handler

The message handler that resides on both Client and Server is the crucial link between the user and the system database. This software is totally transparent to the user and to those who develop the modules that use it. The message handler is fully capable of performing the validation and transfer of data between the ASYCUDA++ engine and any appropriate external interfaces.

On the client side, the message handler receives requests for SQL data manipulation/retrieval from the user interface. It structures those requests so that they can be sent across the network in a format that can be understood by the message handler on the server.

There are several phases involved in this formatting. The request has to be dispatched with the correct requestor information, for instance, not all users will have permission to query sensitive databases. The ASYCUDA++ message handler is a complex piece of software, but this is necessary so that it can allow external applications to use the same tool to pass their own requests across the network.

The ASYCUDA++ Server

The ASYCUDA++ Server is a UNIX driven machine that has as its central data repository, an 'INFORMIX' or 'ORACLE' database containing all master and transaction files required for the ASYCUDA++ national set up. As some of these files also exist at the Client PC level, an integral part of the ASYCUDA++ implementation is the replication of the server master files to the local master files used for validation on the Client PC.

The Server is capable of being partitioned into several 'Virtual Servers' called 'Engines'. This gives the possibility of running several engines on one piece of Server hardware.

Operating System

UNIX, as well as being a recognised standard for open systems, offers the following additional advantages:

- UNIX portability means that the initial investment is small and any necessary upgrade in processing power can occur at a relatively low cost.
- UNIX is the standard environment for most computer oriented technical studies and so the recruitment of system supervision personnel is therefore relatively straightforward.

Relational Database Management System

Informix and Oracle are the SQL databases that can be used on the Server. As the table structure of the reference data on the Server is mirrored by the structure available on the Client, so it follows that the database could be replaced by any other relational database available under UNIX.

SQL interface

The SQL interface has been incorporated into the design philosophy of ASYCUDA++ so that over reliance on proprietary systems is avoided. This interface ensures that a change in the database does not cause a major re-write of the ASYCUDA++ program code.

ASYCUDA++ Engine and Message Handler

The Server engine is the functional kernel of the software. It receives, evaluates, prepares, and returns data. It has the ability to process data in real time or batch mode, and is able to interface with other engines as well as Clients. Unlike some of the layers described previously, this interface is totally UNCTAD designed.

Further engine development

The engine can currently interface with two Relational Database Management Systems – INFORMIX ('Standard' or 'INFORMIX On line'), and ORACLE.

The ASYCUDA++ Modules

The ASYCUDA++ software is made up of a number of sub-systems or modules. They can be defined as an autonomous function, restricted by its organisation and application, around a specific set of data. Each module ensures the integrity of its own set of data, and performs its own message construction and interpretation through calls to the appropriate message handlers and interfaces.

It is possible to install just one module or many. The modules are task orientated in that they relate to the functions or tasks of different Customs offices or operational work groups within Customs offices. The modular approach allows each module to be completely independent, or to coexist with others.

They fall into two general categories, **'User Modules'**, and **'Head Office Modules'** or Configuration modules.

USER MODULES

'User' modules are used by staff in Customs offices for production work, i.e. input and processing of declarations, cargo control, transit, transaction and statistical reporting, accepting duty and tax payments (cashiers), selectivity and for other routine management controls. Customs Brokers or Declarants can also use them to give a direct electronic link to ASYCUDA++.

MODCBR

This is the Customs Declaration Processing Office module and deals mainly with Customs declarations. **MODCBR** allows for the input, validation, storage, registration and assessment of Customs declarations as well as post entry adjustments.

It gives local management of Selectivity functions where physical examination and documentary checks are carried out and controlled. It also contains reporting options to check on the status of goods under suspense regimes, such as goods in warehouse or under other temporary import or export suspense procedures.

MODBRK

This is a modified version of Module **MODCBR**. It is designed for use by Declarants/Customs Brokers and gives them a direct electronic connection to the Customs ASYCUDA++ system. Using "Direct Trader Input". The user can prepare and lodge Customs declarations and initiate transit procedures. This module is designed to be used by Declarants or Brokers on their own terminal(s) in their own office(s).

Access is limited to only those functions relevant to the dealings of the specific declarant using **MODBRK** and excludes the Customs control and reporting functions available under **MODCBR**.

MODENT

This is another modified version of Module **MODCBR**. It allows the same access as **MODBRK** above, but can be used by any Brokers or Declarants who have the relevant password permissions. It allows a number of users to work on the same terminal in a public access location. For example, an ASY++ terminal supplied by Customs in their Processing Office or by an airline at an airport.

Access is limited to only those functions relevant to the dealings of the specific declarant using **MODENT** and excludes the Customs control and reporting functions available under **MODCBR**.

MODACC

This module covers all accounting and payment functions of the system, both directly related to the Declaration, such as taxes and duties, and those not directly related to the Declaration, such as Customs Overtime charges.

MODSEL

This gives the ability to control the selection and flow of declarations through the Customs Declaration Processing system. It contains controls to block the Assessment of selected declarations, to allow physical examination and documentary checks to be made and has a range of querying and reporting functions.

MODCAR

The 'Carrier' module is used for the preparation and transmission of cargo reporting details in electronic format. It is used to create electronic carrier or transport Manifests and Bills of Lading (B/L). Used in conjunction with other ASYCUDA++ modules, including Declaration Processing and Transit, it allows cargo clearance to be managed and controlled.

MODTRS

This module allows for the electronic capture and transmission of Transit data and allows Customs offices to control the movement of all transit goods within their National Borders and for simplified import clearance at the Border. Transit documents created and managed within **MODTRS** are the Customs Transit (T1), TIR Carnet and FIP (First Import Procedure).

MODSDI

This module allows for the processing of manual declarations from Customs Offices that do not have access to the ASYCUDA++ system. It allows the manual declaration data to be input to the ASYCUDA++ database by Customs Officers based in Headquarters or Regional Offices.

It works in a similar way to **MODCBR** but has no links to the accounting system. This means that declarations are input with the operator entering the existing manually allocated registration and assessment numbers from the original office and the amount of duty paid on the declaration - without any system validation.

HEAD OFFICE MODULES

The **'Head Office Modules'** are used for the initial set up of the ASYCUDA++ system to meet National Requirements, (e.g. Types of declaration forms, National Tariff, Tax rates etc).

They are then used for maintaining the reference data used by the system, i.e. Currency Rates of Exchange, and a range of codes including Importer, Declarant, Bank, Warehouse etc, and are also used to maintain system security.

MODCHQ

This module allows for the processing of manual declarations from Customs Offices that do not have access to the ASYCUDA++ system. It allows the manual declaration data to be input to the ASYCUDA++ database by Customs Officers based in Headquarters or Regional Offices. It also allows for the creation and maintenance of taxation relief rules.

MODCHQCF

This is the National Customs configuration module. It allows National Standards to be applied and for the creation and maintenance of the main types of taxation rules covering Global Fees, Item related Taxation and tariff Taxation Column Rules.

The National Standards consist of:

- The Country name and currency;
- The assignment of field types and length;
- Global calculation definitions for charges not based on declaration items;
- The definition of the Tariff columns together the standard taxation calculation method;
- Standard Valuation apportionment calculations.

MODSYSCF

This is the System configuration module that allows ASYCUDA++ to be configured for National use and includes the configuration options for Customs Offices and the User Access Controls.

The system configuration module allows the following to be set up:

- Configuration of the Customs Office codes;
- The list of ASYCUDA++ modules authorised at that office;
- Configuration of series numbering for declarations and cashier receipts;
- User management controls – the definition of functional User groups within the password management system, including attaching individual Users to password access groups.

MODGTW

The 'Gateway' module is for communication between ASYCUDA++ sub systems in the National system. This module allows all communications between offices to be automated, e.g. it may be used to allow routine reference table updates to be transferred from headquarters to regional offices, and for transaction data from regional offices to be received in return. For full details of the operation of the ASY++ Gate please see the relevant Technical documentation.

MODTST

This module has facilities to allow the testing of the ASYCUDA++ system operations by allowing generation of load tests to be carried out on declarations by automating procedures such as registration and assessment and analysing the responses from servers. It allows for meaningful testing of the prototype system before implementation.

Health and Safety

Introduction

Many countries have adopted laws or guidelines on the minimum health and safety requirements for work with display screen equipment. Guidelines are in the interests of the health of the individual, and also in the organisation's interests as regards productivity and costs.

Example guidelines, relating to equipment - its position, location, and use - are given below:

Display Screen

- The characters on the screen will be well-defined and clearly formed, of adequate size and with adequate spacing between lines and characters;
- The image will be stable, with no flicker;
- The brightness, contrast and screen background will be easily adjustable by the user;
- The screen must able to tilt and swivel easily to suit the user;
- The screen to be free of reflected glare and reflections that could cause discomfort to the user.

Keyboard

- The keyboard shall be able to be tilted and separate from the screen, to allow the user to find a comfortable position for the hands and arms;
- There will be sufficient space in front of the keyboard to allow support for the hands and arms;
- The keyboard will have a matt surface to avoid glare;
- The keyboard will be arranged in such a way so as to make it easy to use;
- The keyboard will be legible.

Work Surface

- Large enough to be able to locate all equipment and documents necessary;
- The document holder to be adjustable and stable so as to minimise head and eye movements;
- There will be enough space available to allow users to work comfortably.

Work Chair

- The chair will be stable and allow for easy movement.
- The seat will be height adjustable.
- The seat back will be both height and tilt adjustable.
- A footrest will be available if required.

The Office Environment

Apart from the equipment in immediate use (i.e. the computer, chair and desk) the surroundings within the office are also very important from the point of view of both safety and productivity e.g. lighting and temperature.

Lighting

Different types of light are necessary for different types of task. The major types of task involved with computer operations are shown below.

Types of Task

a) Data Preparation - little use of screen during keyboard input;

b) Word Processing - moderate use of screen for layout and editing;

c) Interactive - reading screen presented data, manipulation of data.

Artificial Light

Systems Type a) and b) require higher levels of artificial light than type c), which can be performed within normal office light.

Natural light

Natural light can cause the lighting level to exceed desirable levels.

Glare and reflection

These can impair vision and cause visual discomfort so reduction is very important. This may be done by maximising use of non-reflective surfaces, by careful positioning of equipment relative to natural light sources and by use of screen filters.

Maintenance

Fluorescent tubes must be replaced before flickering becomes disturbing.

Space

Additional space should be allowed for communally used equipment. Where the workstation is user specific additional space should be allocated only if additional furniture is required. For ease of access for repair and maintenance an ideal area of 4 square metres should be allowed.

Temperature, Humidity and Dust

Equipment will work satisfactorily in a normal office environment. Any extremes of temperature and humidity that will affect both equipment and users should be avoided. Computer equipment will raise temperatures and may require mechanical ventilation. Excessive draughts can cause operator fatigue and should be avoided.

Low Humidity can give rise to static discharges between the earthed framework of the equipment and the operators. Anti-static devices or humidifiers can be used to minimise this problem.

Dust can seriously affect disk drives and build-up can cause overheating leading to system failure.

Power supply

Normal office main electrical power is usually adequate but a separate clean supply will avoid system failures arising from power fluctuations. In some cases separate "smoothing" equipment or UPS machines with backup diesel generators may be needed.

Earthing - Mains plugs should be fitted and should be correctly earthed for added safety.

Radiation and radiated interference - Radiation from equipment is negligible and is much lower than is given off by many household appliances.

Potential Radiation danger in Pregnancy

There is little evidence to support fears of damage to mother or child through radiation. It is possible that problems could arise due to pregnant women sitting still for long periods at a terminal. Short periods away from the terminal should be allowed. However, many governments allow pregnant women the right not to work with VDUs. Computers can themselves be affected by outside radiation and radio frequency transmissions and should not be sited near to any such sources or lightning conductors.

Furniture

Workstation furniture should be fully adjustable to encourage correct posture and thus reduce the pressures that can cause operator fatigue or physical strain.

Noise

Printing equipment can generate excessive noise that should be reduced by acoustic hoods for printers, particularly dot-matrix type. Laser printers should be used where possible to minimise noise and increase productivity.

Stress

Can result from

- Boredom, weariness, environmental conditions, office layout etc.
- Worry about responsibility
- Bad posture
- **Regular rest periods away from the VDU are recommended.**

Visual Fatigue and Eyestrain

- Can be dangerous to users of certain medication;
- Caused by glare, reflection, lack of contrast;
- Site VDUs at right angles to the main light;
- Strip lights can interfere with screen displays;
- VDU angle, brightness and contract should be adjustable;
- Screen design of applications is important;
- Eyesight checks may be needed.

Posture

- Adjustable seating and computer furniture is essential.

Additional Safety concerns

- Screen flicker may affect epileptics who should seek medical advice if uncertain;
- Good cable management is essential to prevent accidents to staff and damage to equipment;
- Equipment must be properly sited;
- Proper maintenance of equipment, cables and connections is essential;
- There must be means to isolate power supply;
- Fire extinguishers should be properly sited and marked.