

**Kent County Council**  
Digital Curriculum Team  
Rm 2.30 Sessions House  
County Hall  
Maidstone  
Kent  
ME14 1XQ

**T** +44 (0) 1622 694XXX  
**F** +44 (0) 1622 694XXX

# ICT Specification of Requirements

Version 1.0

DRAFT

**Generic**

02 August 2006

## Contents

1.0	Introduction	2
2.0	Key Requirements	3
3.0	Infrastructure Components	6
	System Architecture	6
	Systems Integration	6
	Incoming Services	7
	Ratios	<b>Error! Bookmark not defined.</b>
	Network	7
	Wireless Networking	7
	e-Learning	7
	Administration	8
	Maintenance and Technical Support	8
	Printing Management	9
4.0	User Equipment	10
	General Requirements	10
	Interactive Technologies	10
	Pupil Laptop / Tablet Trolleys	10
	Teacher Laptop/Tablet	11
	Applications Software	11
	Teacher ICT Familiarisation and Training	11
5.0	Area Requirements	12
	Classification of ICT provision in rooms and spaces	12
	Catering, Kitchen and Dining areas	12
	Repro-room	13
	Staff Room	13
	Music	13
	Science	13
	Library	13
	Maths	13
	Drama Spaces	14
	Physical Education	14
	Special Needs	14

## 1.0 Introduction

- 1.1 This functional specification translates the vision of Molefield Community College into a set of ICT requirements.
- 1.2 This document is a pre-requisite for a tender or request for proposal, which will return a detailed schedule of equipment, software and infrastructure. Options and alternatives should be presented where detailed requirements are unknown.

## 2.0 Current ICT Provision

This section should give details of the current ICT provision from audit information.

It will include a full description of the network (with diagrams where available), and other information, such as IP schema where relevant.

## 3.0 Key Requirements

- 3.1 Learning and teaching are paramount, and ICT provision should support these activities, not dictate them. We must offer the Pupils and staff as much flexibility as possible, in order to accommodate a wide range of learning and teaching styles.
- 3.2 The ICT design should be durable, and scalable with the capacity to accommodate the number of Pupils and staff when at full capacity with some redundancy. This section should include the pupil roll and staff numbers.
  - KS1 =*n*
  - KS2 =*n*
  - Staff - 125 =*n*
- 3.3 We envisage a high level of rich audio/visual content available to Pupils, staff parents and associated learning communities. The network infrastructure must be designed for durability, and able to cope with evolving technologies.
- 3.4 A flood-wiring schema should be implemented, where there are many more data outlets than required, as it is cheaper to fit them during works than to retrofit.
- 3.5 Teacher equipment should be from a single manufacturer and should meet the Becta Laptops for Teachers specification. This may be a Tablet or Laptop.
- 3.6 Classroom projectors will meet Becta specifications and interactive whiteboards should be from SMART to ensure compatibility with existing software and pedagogic practices. Developments in the use of pen based computers such as Tablet PC's may result in a mixed economy of Interactive Whiteboards and other devices.
- 3.7 Pupils and teachers should be able to access their own personal view of the network and all relevant information from any computer on the premises.
- 3.8 Pupils, teachers and parents should be able to access relevant information from outside the School through an integrated portal based Learning Platform.
  - Pupils and teachers should each have their own 'virtual learning space', and e-portfolio.
  - Pupils and parents should be able to securely view key Pupil assessment information.
  - The School will host a public facing web page and portal environment that will provide important information as well as promoting community activities and providing an environment for the exchange of information between community groups and other stakeholders.
- 3.9 The School has an underpinning ethos of community involvement and access. Priority should be given to ensuring that systems are accessible outside of hours within a clear security policy to protect children.
- 3.10 Software should be intuitive, functional, and relevant to the job in hand.

- 3.11 A Learning Platform will provide content creation and delivery, administration, and communication.
- 3.12 Parents will be encouraged to provide access to Internet connected computing at home. Where this is not possible the school will facilitate access through a range of means, including USB memory sticks, extended opening of computer facilities etc.
- 3.13 The use of ICT in the school should be inclusive, accessible, intuitive, consistent, effective, and motivational.

## 4.0 Infrastructure Components

### System Architecture

- 4.1 ICT needs to be consolidated around the existing ICT infrastructure.
- 4.2 ICT solutions must meet the requirements of teaching, learning and administration based around the school management information system as the prime source of user data and information.
- 4.3 The infrastructure and services should be based on open or de facto standards.
- 4.4 The systems deployed should be compatible with the BECTA networking standards for security and design.
- 4.5 The ICT infrastructure can be divided into:
  - a Incoming data services (e.g. Broadband Connection, Kent Community Network)
  - b Facilities (e.g. Machine rooms, equipment locations)
  - c Network (e.g. cables, switches, wireless access points, firewalls)
  - d Network Servers and data storage (e.g. Domain, directory structure, file storage and print services, authentication certificates, user management).
  - e Administration, communications, content management, teaching and learning applications.
  - f User Devices (e.g. Desktop PC, Tablet, laptop, PDA, IP telephone etc.)
  - g Minor peripherals (Printers, scanners, digital video and still cameras, video-conferencing etc.)

### Systems Integration

- 4.6 All systems must work together.
- 4.7 The School has existing management systems. Some are formal processes or procedures, others recognised or instinctive. As the School is reliant on ICT, it is essential that the advantages to be gained from integrating these systems encompass all activities, build on strengths, identify weaknesses, and aid control and improvement.
- 4.8 School ICT systems are expected to be available immediately, provide exceptional functionality, maintain flexibility, and operate flawlessly. Systems integration is the key to meeting all these goals.
- 4.9 Suppliers will be expected to interpret the needs of the School to integrate and optimise IT services and applications.

- System level consolidation
- Storage management, backup and recovery Strategies
- Configuration Support.
- Disaster Recovery Planning
- Server and network configuration and installation
- Web applications and transactions
- Graphical user interfaces

## **Incoming Services**

4.10 High-speed broadband connection into the School is provided by the Kent Community Network.

## **Network**

4.11 There is one combined admin/curricular Local Area Network (LAN) which is managed and supported locally.

4.12 The admin/curricular network will need to cope with a variety of applications. As the emphasis will be on the use of rich media content such as digital video, many of these will require a high available bandwidth. These must be delivered with minimal latency and provide enough bandwidth headroom to accommodate later additions to services and applications.

4.13 The network consists of fibre-optic backbone with redundant fibres for expansion, linking the incoming comms room, server room and distribution points.

4.14 Structured twisted pair cabling should be provided, compliant with the IEA Category 6 standard.

## **Wireless Networking**

4.15 A high bandwidth, high speed wireless network is required to support the wired network. This network will provide wide coverage in specified areas, with mobile wireless access points attached to storage / charging trolleys for specific curriculum areas.

4.16 A key requirement is for centrally managed wireless access points that allow for automated load balancing and central management.

## **e-Learning**

4.17 A learning Platform will be part of the new ICT environment, for both pupils and teachers, and should be accessible from any Internet connected computer. Communication

- The Pupils will be able to communicate with other Pupils and teachers using e-mail.
- Teachers will be able to assist in their Pupils' development, by answering queries on assignments and other issues.
- Pupils and teachers should each have their own 'personal online space, with pupils having their assessment and other information on an e-portfolio.

### **Collaboration**

- Both Pupils and teachers should have access to an electronic diary; this will be used to view/record timetable information, as well as schedule extra-curricular activities, and set themselves reminders.
- All users will be provided with links to useful sources of information on the internet for reference, such as education portals.

### **Content delivery**

- Teachers will be encouraged to create and publish in a variety of media and provided with training and software tools.

### **Assessment**

- The teacher should be able to monitor attendance records for each of their classes.
- Parents will be able to receive information through electronic means such as email, or through an online portal to reduce the need for printing costs, and to reduce costs.
- Pupils and parents should be able to securely view key Pupil assessment and attendance information.
- The parents will be able to review their child's progress, and attendance records online.

### **Personalisation**

- Both Pupils and teachers should be able to personalise their view of the Learning Platform, this will primarily involve the appearance (colours, font etc.)
- They should also be able to customise the organisation of their home-page to a degree, to include frequently visited links to internal or external resources.

### **Information**

- The Learning Platform should provide news and information for parents and staff through a personalised portal view.

### **Remote Access**

- Teachers to access assignments for marking, and be able to create content

### **Administration**

- 4.18 The admin team will need a management information system that integrates with the Learning Platform.

### **Maintenance and Technical Support**

- 4.19 Technical support for the extensive ICT provision within the School will be based on the BECTA Framework for IT Support (FITS). The emphasis is on proactive tasks as well as reactive ones.

- Tried and tested processes designed for a school environment.
- Teaching staff protected from becoming involved in technical issues.
- Capture of service level and performance data.

## **Printing Management**

- 4.20 Proactive printer administration will be required with automatic advance warning of possible problems. This will make it easier to prevent problems before they occur and to troubleshoot quickly.
- 4.21 Printers should connect directly to the network in all cases, allowing them to be managed effectively.

## 5.0 User Equipment

### General Requirements

- 5.1 Screens should be Flat Panel, minimum 12" when part of a laptop/Tablet, 17" for desktops.
- 5.2 Desktop computers should be small enough to fit the desks in the appropriate rooms, and should have energy saving features, with minimal heat output.

### Interactive Technologies

- 5.3 The main components of an interactive classroom environment are:

- a** Interactive Whiteboards
- b** Laptop/Tablet PC
- c** Data projector
- d** DVD players
- e** Media storage and retrieval
- f** Digital content

We propose that provision for classrooms is based around the use of the teacher Tablet PC / laptop delivering content and resources through a data projector and interactive whiteboard, with the capability to present DVD formats through the same computing device. The initial use of an interactive whiteboard is likely to provide an evolutionary progression to the use of digital content in a manner which is familiar to teachers. Consideration may be given to the use of the Tablet technology as a replacement for the interactive whiteboard.

### Pupil Laptop / Tablet Trolleys

- 5.4 It is expected that provision will move the school towards a 1:1 ratio of computers to pupils over the next five years, and that this will be achieved through the use of mobile wireless technology. It is essential that the wireless system can manage the traffic loading and distribution. Recent years have seen the development of effective systems to achieve this, with the added advantage that the management provided can accommodate devices that are not direct clients of the school network.
- 5.5 It is important for ICT resources are available at the point of learning need, and in any lesson. This can be achieved by the use of trolleys to create a mobile ICT suite.
- 5.6 Consideration may be given to providing a wireless infrastructure able to accommodate privately owned Pupil devices, allowing a secure and protected log-in to the network. Security and access issues should be considered before such a decision is made.
- 5.7 The latest power-saving devices should be used to reduce the need for charging, and provision should be made to include exchange batteries or extended life battery packs, preferably those that can be 'hot-swapped' without loss of service.

- 5.8 Pupils expect to be able to attach devices, and it is important that there are plenty of USB ports, and a fire wire port for digital video.

### **Teacher Laptop/Tablet**

- 5.9 Each Teacher and an appropriate selection of support staff should as a matter of course be provided with a 'clam-shell' style Tablet PC with built-in keyboard, or a laptop.
- 5.10 The make and model of Tablet PC/ Laptop should be standardised across teaching staff to ensure compatibility with any docking stations or teacher lecterns.
- 5.11 Each Tablet PC / laptop should have wireless and wired networking capabilities.
- 5.12 Each Tablet PC / laptop should have access to a CD-RW/DVD combo drive (preferably internally fitted, although most Tablet PC's require an external 'plug-in' drive).

### **Applications Software**

- 5.13 Each computer will have installed an 'Office' suite of programmes that includes word-processing, spreadsheet, database, Internet browser, email, and a range of standard utilities. Consideration should be given to the use of open source software such as Open Office which is free and provides most of the functionality of proprietary suites.
- 5.14 Offices should have additional applications to interface with the school information management and administrative systems.
- 5.15 Subject specific applications will be made available to relevant teachers and Pupils from a central server.

### **Teacher ICT Familiarisation and Training**

- 5.16 Product specific training shall be included for all hardware and applications provides.

## 6.0 Area Requirements

This section will outline the general requirements of ICT within specific areas.

### Classification of ICT provision in rooms and spaces

6.1 The ICT provision for specific rooms and spaces have been classified as follows:

**Standard Teaching Room** – Consideration should be given to having an area set aside within the room/space for the storage and charging of laptop trolleys. If this approach is taken, adjacent to each storage space will be a data point and power. Each mobile trolley should be fitted with a managed wireless access point, built-in charging system and networked A4 mono laser printer. Wherever computers are needed they can be wheeled into place, and plugged into the network for immediate use. This will provide flexibility.

4 No. data points at waist height at the front of the classroom, mounted in pairs either side of any interactive whiteboard.

- 1 No. high level data point for additional wireless access points if and when required.
- Ceiling mounted data projector
- interactive whiteboard with computer audio system
- DVD player

**ICT Suite** – Room / Space is equipped as a 'standard teaching room' but fully populated with 1:1 ratio of hard-wired desktop computers instead of laptop trolley.

The furniture, fittings and electrical installations should provide effective wire management features, and be aesthetically pleasing.

In addition: will be equipped as follows:

- Air conditioning provided where the room is enclosed.
- A4 colour laser printer.

**Special** – This identifies rooms / spaces where the ICT provision is bespoke.

**Administration** – The Administration office will contain a minimum of 1 No. hard-wired desktop computer per occupant based on maximum permitted occupancy. Each office will have a networked mono A4 laser printer. Where offices are in close proximity, a workgroup mono A4 laser printer should be provided.

Where specific additional provision is made, this is noted under the relevant section.

### Catering, Kitchen and Dining areas

6.2 There may be a later requirement for the provision of systems for cashless catering. This will require suitable and sufficient data points to be located at the point of sale area.

- 6.3 The dining manager's office will require at least one data point.

### **Repro-room**

- 6.4 The repro room should be well ventilated and be equipped with a high volume combined photocopier / network printer.

### **Staff Room**

- 6.5 The staff room should provide a resources area for teachers and teaching assistants. As each member of teaching staff should have a personal computing device, either laptop or Tablet, provision should be made for docking stations equipped with 17" LCD monitor, keyboard and mouse.
- 6.6 The staff room should be equipped with a workgroup mono A4 laser printer.

### **Music**

- 6.7 A studio area will be equipped with a professional quality digital recording studio. This will be equipped with a digital mixing desk (with the facility to digitally store settings), and an effects rack. This will be linked to a computer for recording.
- 6.8 Spider cabling and racking will be provided to extend audio from the mixing desk to the recital area, using standard XLR connectors.
- 6.9 The recital area should be equipped with a digital music workstation comprising a MIDI keyboard, USB connected audio input/output device, computer with 19"LCD screen, large capacity hard drive, installed with industry standard music production software.
- 6.10 Single room power supply for keyboards rather than individual adapters.

### **Science**

- 6.11 Science requires the use of data logging and monitoring equipment.
- 6.12 Range of USB temperature, pressure, force, motion, acceleration, and displacement transducers in science labs that produce digital and analogue outputs to be captured by computer.
- 6.13 Networked weather station equipment and simulation software should be considered.

### **Library**

- 6.14 The library will be equipped with 2 No. desktop computers and space for laptops / Tablets.
- 6.15 The library will have an integrated software based lending system based on ISBN bar-coding for a range of media.
- 6.16 Provision will be made for the viewing of digital media such as DVD and CD-ROM, and for the asynchronous storage of recorded digital TV programmes.

### **Maths**

- 6.17 A range of specialist math's software will be provided to make best use of the interactive whiteboard and ICT suite.

## **Drama Spaces**

- 6.18 The drama department will require access to a loan set of digital video and still cameras.
- 6.19 There should be access to video editing software.
- 6.20 Sufficient data points need to be provided in performance spaces to enable the use of connected technologies such as video streaming.

## **Physical Education**

- 6.21 Staff will record assessment and performance data from the games fields using their Tablet / laptop.
- 6.22 There will be a need for public address and large screen digital projection. This will need to be protected from flying balls etc.

## **Special Needs**