NHS

Sussex Health Informatics Service

*Supporting healthcare with technology*

# Sussex HIS Technical Standards

# For New Services

## *Version control*

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| **Commercial in Confidence** | | | |
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| 0.1 | 05/06/2009 | First draft for comments |
| 1.0 | 05/06/2009 | Andy Bissenden and Steve Orman Review |
| 1.1 | 19/06/2009 | Incorporating comments from Alan Carter, Hill Dunn Associates |
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| 1.12 | 24/6/2009 | Updates windows 7 and IPv6 |
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| 1.2 | 07/05/2010 | Update to Server Operating System |
| 1.21 | 24/5/2010 | Amendments for  Alan Carter and further update to versions |
| 1.22 | 14/7/2010 | Added previous version of standard build and minor amendments |
| 1.23 | 22/7/2010 | Added Section on licencing |

**Approvals:**

This document requires the following approvals

| Name | Signature | Title | Date of Issue | Version |
|---|---|---|---|---|
| Steve Orman | | Sussex HIS Director of Technology | 22/07/2010 | 1.23 |
| Andy Bissenden | | Sussex HIS Technical IT Manager | 14/07/2010 | 1.23 |
| Graham Crawford | | Sussex HIS Lead Information Officer | 14/07/2010 | 1.23 |

Approved forms are to be distributed to key project and management personnel and then filed in the Project Document Library.

**Validity**

- Printed output of this document is only valid on the day of printing.

## Contents

## 1. Introduction

Sussex HIS is responsible for providing a high quality support service for IT applications and systems across all Sussex HIS NHS stakeholders. New IT services and applications introduced by stakeholders are necessarily driven by stakeholders, with focus on functionality to meet an existing need, or support a new business function. As a consequence of the stakeholder-driven specification and procurement processes the technical requirements specification can receive a lower priority than the functionality. This can lead to IT services that do not comply with HIS requirements for infrastructure technology, Trust Estate initiatives or fit within the HIS' skills envelope.

This document focuses on new environments where Sussex HIS will be responsible for supporting the platform(s) hosting the application(s).

The standards proposed within this document should not preclude the best solution being deployed, but the impact for ongoing support should be included in the evaluation criteria.

## 2. Document Purpose

This document should be used by the Sussex HIS and their stakeholders to:

a. Assist stakeholder trusts assessing new IT services and applications for compliance with existing standards for the support of systems

b. Assess impact on the SLA (Service Level Agreement) between Sussex HIS and the stakeholder of any new systems introduced

c. Inform third parties responding to a Tender invitation of prerequisite requirements and/or preferences of Sussex HIS relating to operational support

d. Act as an adjunct to the requirements detailed in 'Invitation to Tender' documents, focussed on the delivery platform, rather than functionality of an application

This document will not assist trusts or suppliers in specifying, delivering or assessing system functionality; functional requirements will be specified elsewhere.

## 3. Demarcation of responsibility

The demarcation of responsibility for support will determine the level of compliance required to Sussex HIS standards. The table below shows possible demarcation options depending on the level of support offered by the vendor:

| **Area of responsibility** | **Implementation Options** | | |
|---|---|---|---|
| | **Application hosted offsite by supplier** | **Application hosted onsite with vendor support for platform and operating system (o/s)** | **Application hosted onsite with HIS support for platform and operating system (o/s)** |
| **Desktop support** | Sussex HIS | Sussex HIS | Sussex HIS |
| **Desktop support for application** | Vendor/Sussex HIS | Vendor/Sussex HIS | Sussex HIS |
| **Network support** | Sussex HIS | Sussex HIS | Sussex HIS |
| **Server hardware support** | Vendor | Vendor | Sussex HIS |
| **Server o/s support** | Vendor | Vendor | Sussex HIS |
| **Server Database support** | Vendor | Vendor | Sussex HIS |
| **Application support** | Vendor | Vendor | Vendor |
| **Virtual environment support** | Vendor | Sussex HIS | Sussex HIS |
| **Printer support** | Vendor/Sussex HIS | Vendor/Sussex HIS | Sussex HIS |

Table showing possible demarcation of responsibility scenarios

# 4. *Server Environment requirements*

## 4.1. Server Hardware requirements (hosted onsite)

Where a solution is to be hosted onsite the server hardware will be specified to both a preferred and minimum specification, to meet the requirements of the software specified by the third party.

Following competitive ‘E-auctions’ and evaluations, Sussex HIS currently procures HP server hardware only. HP server hardware would therefore be prerequisite for Sussex HIS to offer support within the standard SLA template between Sussex HIS and its stakeholders. Server hardware outside of these requirements may be assessed for support and appropriate adjustments to those SLAs.

Where responsibility for supporting the entire solution will remain with the vendor, the requirements will be limited to assuring the physical fit and environmental requirements.

## 4.2. Server operating systems

The majority of server platforms currently in Sussex are Microsoft Windows Server 2003 R2 SP2. Windows Server 2008 SP1 is the current preference for new systems; in both cases the preferred architecture is 64-bit.

The planned Virtualisation of most platforms to the ESX virtualised environment[1] will not affect operating system choices as all x86-based platforms are supported. Where the HIS is supporting them, operating system choices will be evaluated against the prevailing standards for support.

Before any servers or services are added or upgraded licensing must be agreed and signed off by Sussex HIS Technical Director.

## 4.3. Vendor-Hosted options

Hosted options, where the application is held offsite **MUST** comply with these requirements:

- Any application holding clinical, or other confidential data must be hosted within the N3 network
- All data must be encrypted between client and server using a minimum encryption key length of 128bits
- Clients must be:
  - Web browsers; or
  - Thin Client (Terminal Services, Citrix); or
  - VM ware hosted clients (VDI)
- Third party providers must meet CFH (Connecting For Health) principles of Information Security and Information Governance relating to storage and transmission of data[2]
- All licensing is accountable to the hosting vendor unless explicitly identified and agreed by Sussex HIS and the trust

[1] http://www.vmware.com/products/esx/

[2] Details on principles, legal obligations and guidance can be found here:
http://www.connectingforhealth.nhs.uk/systemsandservices/infogov/security
http://www.connectingforhealth.nhs.uk/systemsandservices/infogov/codes
http://www.connectingforhealth.nhs.uk/systemsandservices/infogov/

### 4.4. Server Anti-Virus software

Anti-virus software is a prerequisite for any machine connected to the data network. Where the installation of anti-virus software and continuous updating is not possible,(potentially for medical devices requiring a manufacturer's signoff), the vendor must explain how this risk will be mitigated.

### 4.5. Data Backup Procedures

Where backups are not automated, the backup procedures must be approved by Sussex HIS before being accepted into operations. Where offsite backups are offered, the third party provider must meet CFH standards for data security and Information Governance relating to storage and transmission of data[1].

### 4.6. Database standards

Where a database is part of the solution, this is preferred to be Oracle (currently free at the point of use to the NHS) or Microsoft SQL 2008. Where Sussex HIS supports the database, the software proposed will be evaluated against Sussex HIS current standards.

### 4.7. Supported within virtualised environment

The VM Ware ESX environment has been evaluated by Sussex HIS as the most efficient use of server resources within Sussex. Projects to migrate applications and services to the ESX platform are already under way in Sussex. Any new or replacement solution should be technically deliverable, licensed and supportable within this virtual environment.

## 5. Client Environment

### 5.1. Client hardware

Client (PC) hardware must be specified to both a preferred and minimum specification, to meet the requirements of the software specified by the third party. Following competitive 'E-auctions' and evaluations, the Sussex HIS procures HP PC hardware only. Where a system requires additional PC clients, Sussex HIS would source any additional units from its predefined HP PC specifications. The pre-defined clients are all supported with pre-defined and tested software 'builds', hence the requirement to maintain control of the hardware platform. See 'Appendix A' for current standard software build.

Any PC client requirements beyond the Sussex HIS pre-defined offerings, such as advanced graphics capability, would need to be assessed and approved by Sussex HIS operational development teams, before they could be accepted into support.

### 5.2. Client standard build software

For client access, the NHS in Sussex currently uses a PC platform exclusively, running the Microsoft Windows XP Professional operating system, packaged into a controlled set of software 'builds'. The software builds offer a standard set of applications and all necessary drivers to support the PC client devices in use in Sussex (See Appendix A for details of current build). This enables rapid deployment and support of PC clients; non-standard configurations fall outside the support SLA between Sussex HIS and its stakeholders.

Although other client operating systems are being evaluated (Windows 7 and open source software), Windows XP Service Pack 3 is the current OS for new services. Windows XP SP2 and SP3 are supported operationally within the Sussex estate. While Windows Vista SP1 has not been released into the Sussex operational environment[3], new services must be supported in this environment. This is for readiness preparation of Windows 7.

### 5.3. User productivity software

The standard software build includes Microsoft Office 2003 Professional. Versions 2007 and 2010 have not been adopted as the overall standard due to dependencies with some clinical services and user created services.

It is recognised that service providers have co-existence requirements with the productivity software. Therefore new services must consider the potential for the NHS to want to adopt alternatives i.e. OpenOffice

Therefore any new service must support, but not limited to

- Microsoft Office Professional Professional 2003 – 2010 inclusive
- OpenOffice 3.2.1 and greater for all operating systems

### 5.4. Client Anti-Virus software

All PC clients within Sussex have Sophos anti-virus software installed and receive regular automatic definition updates.

[3] Microsoft Vista has not been adopted in the operational environment due to existing services not supporting Internet Explorer 7 or 8. As this is an ongoing issue which is recognised by Microsoft in many business sectors. Windows 7 includes compatibility support (MEDV Microsoft Enterprise Desktop Virtualisation) which may allow interim solutions, but Internet Explorer support will remain an issue and the decision to progress a general Windows 7 release in to the environment has been made where there is not issues with compatibility.

### 5.5. Web browser access to applications

The flexible nature and universal coverage of web browsers to clients make them attractive delivery mechanisms for new applications. Web browsers supported must include, but are not limited to:

- Microsoft Internet Explorer 8
- Support for legacy Microsoft Internet Explorer 6 and greater clients
- Mozilla Firefox 3 or higher

All new services must further demonstrate an agreed roadmap for supporting newer versions.

Any Java version requirements should not limit the upgrading of that client to a higher version of Java at a later date.

### 5.6. Authentication

Authentication method describes logon procedures, typically a username and password, to access IT applications. Sussex HIS is evaluating ways of simplifying user logon and application authentication and any new application should be evaluated for its capability to be integrated into these methods. These range from integrating the security with the Windows Active Directory security to full Single Sign-On (SSO) products.

Usernames and passwords should be customisable and enforceable to meet current password requirements[4].

## 6. Network

### 6.1. Protocols and IP addresses

Local Area Networks (LANs) all deploy Fast or Gigabit Ethernet only. Wireless LANs utilise 802.11a, g or n. TCP/IP is the only network protocol in use.  All devices in Sussex connected to the Sussex COIN (Community of Interest Network) are part of 10.179.0.0/16 and 10.96.0.0/16 IP ranges. These address ranges are routable only within the COIN and across the N3 network. These addresses are not visible to the Internet. The N3 is moving to support IPv6 and therefore the Sussex HIS is looking to move to IPv6 in the future so there must be roadmap to support IPv6.

[4] Minimum of 8 characters of mixed alpha-numeric, upper and lower cases and special characters, (at least 3 of 4 of uppercase, lowercase, numeric or special characters must be used). Passwords to be changed every 45 days. 11 passwords are remembered and cannot be reused. Passwords must not contain the user’s full name or username.

### 6.2. Bandwidth and Latency

Expected bandwidth usage per client (both minimal and optimal) **MUST** be identified to enable appropriate calculation and mapping across the COIN for usability analysis. Any sensitivity the application has to latency (delays incurred over a Wide Area Network) **MUST** also be identified as Sussex HIS is working towards consolidation and centralising applications to single data centres which will impact applications that are sensitive to latency.

Both bandwidth usage and latency sensitivity should be key to any assessment as they both have implications for user experience and functionality.

### 6.3. Mobility

Through the use of 3g and wireless technologies, the Sussex HIS is enabling users to be mobile. Two key issues for mobile clients are bandwidth and security:

- Bandwidth will sometimes be limited to 64kbits or less, which will have a detrimental effect on application performance
- Products to be used in this way should be able to support high latency times and must use application layer encryption
- Mobile clients can use an encrypted VPN to access the Sussex network, but are also exposed to the internet. Data transmitted and stored locally **MUST** be encrypted; this **MUST** also apply to non-PC devices, such as smart phones

Applications that support mobility working for e.g., District Nurses **MUST** have an ability to support disconnected working or off-line synchronisation.

All applications should be assessed for delivery to mobile devices, or should be acknowledged to not be supported using these technologies.

## 7. *Security*

### 7.1. Data security and encryption

Data stored on central servers or clients **SHOULD** be encrypted on the disk. Mobile devices such as laptops are now equipped with endpoint security for disk encryption, but this will not be applied to servers.

Any data transmitted across the network **MUST** be encrypted using 128bit or greater key length. Regardless of the security status of the network, it is a goal of CFH that all applications containing PID (Person Identifiable Data) **SHALL** be encrypted.

### 7.2. Offsite data

Where data is to be stored off-site, either within a hosted environment, or for backup /archive purposes, the data **MUST** be encrypted. The supplier **MUST** adhere to the CFH Statement of Compliance and have successfully completed the Information Governance Toolkit[5].

## 8. Support

For successful transfer to operational support, there **MUST** be definition of which elements of the solution will be supported by the third party and which will require support from Sussex HIS. As discussed under Section 3, demarcation of responsibility will be partly driven by the method of delivery for an application and partly by existing support arrangements, cost and so on. A new contract with a third-party supplier will need to fit with existing or new SLAs between Sussex HIS and the stakeholder, considered during the Evaluation Stage, and agreed between the Stakeholder and Sussex HIS prior to Award of Contract.

### 8.1. Third party support connections

To meet Sussex HIS requirements for network security, all third-party connections will be via N3 (i.e., there will be no direct or dial connections into the network). This requires supporting organisations to have N3 connections, which in turn means signing the CFH Statement of Compliance, plus the requirement for completion of the Information Governance Toolkit (see section 7.2).

Where an N3 connection is not practicable in the short term for on-going support, Sussex HIS may provide and charge for a remote access token, to provide limited client access to the Sussex COIN, (Community of Interest Network, a Wide Area Network for Sussex NHS organisations).

### 8.2. Change Process

Suppliers of systems are expected to comply with Sussex HIS change processes which apply controls to how changes, upgrades and updates are applied. This applies equally to Sussex HIS. Details of the change process can be found in Appendix C.

### 8.3. Support response times

Response times of any suppliers involved in the solution should be defined prior to selection to ensure suitability for a particular environment.

[5] See http://www.connectingforhealth.nhs.uk/systemsandservices/infogov/igsoc

# 9. Application Specific Criteria

## 9.1. Demonstrable N-1 roadmap

IT Application Suppliers **MUST** demonstrate that they follow a development road map that supports multiple versions i.e. a latest release contains new functionality, but a previous, stable version remains supported. When another new version is released, the previous stable version (at least) is still supported. In this way a stable version and a version offering the latest developments are always available as choices.

IT Application Suppliers **MUST** have a demonstrable roadmap for integrating new server and client platforms.

## 9.2. Availability

System availability will be specified by the trust as appropriate to meet requirements. However, where Sussex HIS is also providing support, this will need to be decided in conjunction with Sussex HIS to ensure all needs are covered.

## 9.3. Specialised Equipment

Any specialised equipment will be assessed for IM&T requirements before allowing connection to the.

# 10. Licensing

## 10.1. NHS Microsoft Enterprise Wide Agreement

NHS organisations had been covered by centrally funded Microsoft Enterprise Wide Agreement for certain licenses. This agreement expired on May 31st 2010. Therefore any new or upgraded services must consider whether the lack of an Microsoft EWA has consequences to licensing that must be met locally.

This section will be expanded on when the current situation in July 2010 become clearer.

## *Appendix A – Client standard build*

Current Desktop standard build software environment:

| Software | New Version<br>XP_SP3_10_06 | Old Version<br>XP_SP2_09_11 |
|---|---|---|
| Microsoft Windows XP Professional | SP3 | SP2 |
| Windows Updates for Operating System | 14th June 2010 | 13th November 2009 |
| Adobe Flash Player | 10.1.53.64 | 10.0.32.18 |
| Adobe Reader | 9.3.2 | 9.2.0 |
| Adobe Shockwave Player | 11.5.1.609 | 11.5.1.601 |
| Clean Your Hands Screensaver | Year 3 | Year 3 |
| Compatibility Pack for 2007 Office Suite | 12.0.6425.1000 | 12.0.6425.1000 |
| Java | 1.6.0.60 | 1.6.0.60 |
| Citirx Metaframe | 9.200.44376 | 9.200.44376 |
| Microsoft .NET Framework | 3.5 SP1 | 3.5 SP1 |
| Microsoft Office 2003 | SP3 | SP3 |
| Microsoft Visio Viewer 2007 | 12.0.6425.1000 | 12.0.6425.1000 |
| Microsoft Silverlight | 4.0.5024.0 | 3.0.40818.0 |
| Microsoft Visual Studio 2005 Tools for Office SE | 2005 | 2005 |
| Microsoft Windows Script | 5.7 | 5.7 |
| NHS Identity Agent | 11.02.00a | 11.02.00a |
| NHS Medical Deskbar Search | 5.0.157.001 | 5.0.157.001 |
| Remove Hidden Data Tool | 11.0.6361.0 | 11.0.6361.0 |

| | | |
|---|---|---|
| Windows Media Player | 11 | 11 |
| MSXML 6.0 Parser | 6.10.1200.0 | 6.10.1200.0 |
| ZENworks (1) | 10.3.0 | 10.2.1 |
| Sophos (1) | 7.6.19 | 7.6.13 |

## *Appendix B – Server standard build*

Current Server base build software environment as at July 2010:

| Software | Version |
|---|---|
| Windows Server (Std, Ent) 2008 32bit or 64bit | SP1 |
| Novell Suse Linux | 11 SP1 |
| Sophos AV | 7.6.19 |
| Novell ZCM | 10.3 |
| Microsoft SQL were applicable | 2005 |
| Oracle DB were applicable | 10i |

## *Appendix C – Change Management process*

Sussex HIS change management process:

# SUSSEX HIS CHANGE MANAGEMENT PROCESS

Document version control sheet

| | |
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| **Document Title** | Sussex HIS Change Management Process |
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## Version Control History

This document supersedes all previous versions of the Change Management Process. The last version of the Interim Change Management Process was v2.1.

| **Version** | **Date** | **Comments** | **Issued to** |
|---|---|---|---|
| 3 | 06/02/2008 | Initial Creation | Marion Pavitt |
| 3.1 | 07/06/2008 | Updates to Appendices | Paul Johnson |
| 3.2 | 07/10/2008 | Addition of Minor Change Process | Sam Harman-Wilson |
| 3.3 | 20/01/2010 | Update to Appendices | Sam Harman-Wilson |