

info  Health



***Medical Device Asset Management System***

## The JADe Group and Infomatrix-Enterprise Solutions



The joint business alliance of **The JADe Group** and **Infomatrix-Enterprise Solutions** founded and developed **f2** in 2006, a robust web-based management system for the NHS that is both widely applicable and can also be adapted for the specific needs of individual NHS Trusts.

**The JADe Group** partners with major industry manufacturers: Microsoft, IBM, SuSE Linux, Oracle and others. Provide comprehensive IT consultancy, full system infrastructure and support, management, development and operational services across a number of business sectors to ensure organisations gain the optimum business efficiencies.

**Infomatrix-Enterprise Solutions** are a specialist information management and reporting ISV who have extensive experience in software development of Healthcare, Telecommunication, Property and Financial Systems. Fully experienced in all aspects of system design, integration and business intelligence solutions, distributed via working in partnership and through alliances with other specialists providing business and technical solutions to real business problems.

### **What is f2?**

**f2** is a general equipment management package which has been developed to replace existing legacy equipment management systems within the NHS.

**f2** has been specified, developed and based on our experience of working within the NHS and we consider our understanding of the required business processes and the issues associated with systems are met within **f2** to support the needs of the modern Clinical / Medical Engineering department.

**f2** is built using industry standard technologies such as Microsoft .NET and the Microsoft SQL Server database.

**f2** differs from its competitors in that it takes a user / role centric view of the data. This includes Medical Technician, Customer Service, Contracts Management and Administration views and contexts. This gives the benefit of providing specific system users with access to their specific information with minimum screen navigation.

**f2** has also been designed to have wider applicability than medical electronics departments alone. It will be possible for the product to be adopted by associated departments within the organisation, thereby enabling better integration and access to shared information across the organisation as a whole. This contrasts with more traditional offerings that tend to be very equipment focused.

The **f2** Legacy Database Migration function will initially provide for the automated migration of data from the following source database systems:-

Packages: - SEMS, Optim, HECS and EMAT systems, etc.

Bespoke database systems: - Oracle, SQL Server, DataEase, Paradox, Excel, Access and C-ISAM.

**f2** is based on a customer focused development led approach. New user-defined screens can be generated by the system developers and attached to a key system entity (e.g., medical devices). A menu panel will also be created as part of this process and seamlessly integrated into the overall **f2** menu architecture. This allows the users to define additional data items that they would like to capture. In addition, due to the component based software approach used in the development of the **f2** system, new user views & reports can be readily included.



## Medical Device Asset Management System *Fully Integrated - Core Functionality*

f2 adopts specific processes, such as Work Requests/Repairs, Scheduled Services / PPM, Equipment Library as well as tailored views of generic information such as Location hierarchies will be in-built and effective.

Each key subject area within the system is identified within collapsible panels on the left-hand side of the f2 screen. Within each panel there will be the capability to **Search, Create, Modify** and **Report** on information related to the subject area (e.g., medical devices).

**Role-based:** people work more effectively if they can focus on what they need to do; we will ensure that the “clutter” of the system is minimised for each specific type of user; that is, the system will automatically reconfigure the display of subject areas based on the role associated with user logged in.

**Flexibility:** the need to allow user control of extending the system - user defined fields, report outputs, etc.

**Web Technology:** 100% web-based, essential for ease of deployment and support.

**Integration:** given the technology (MS ASP .Net /SQL Server) and the component- based approach to development then integration to other NHS or departmental systems is highly achievable.



### Integrated Core Functionality

- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>○ <i>Device Register</i></li><li>○ <i>Maintenance Contracts</i></li><li>○ <i>Work Requests / Repairs</i></li><li>○ <i>Scheduled Services (e.g., PPM)</i></li><li>○ <i>Spares / Stock Control</i></li><li>○ <i>Equipment Library</i></li><li>○ <i>Staff Training Records</i></li><li>○ <i>Reports</i></li></ul> | <ul style="list-style-type: none"><li>○ <i>Help Desk</i></li><li>○ <i>Administration</i></li><li>○ <i>System Audit</i></li><li>○ <i>Document Management</i></li><li>○ <i>Security</i></li><li>○ <i>Teams / Technicians</i></li><li>○ <i>Customers / Locations</i></li><li>○ <i>Third Parties</i></li></ul> |
|--|--|

### NHS N3 Compliance for Remote Access Support

Device Register can be utilised for Medical & Other Equipment

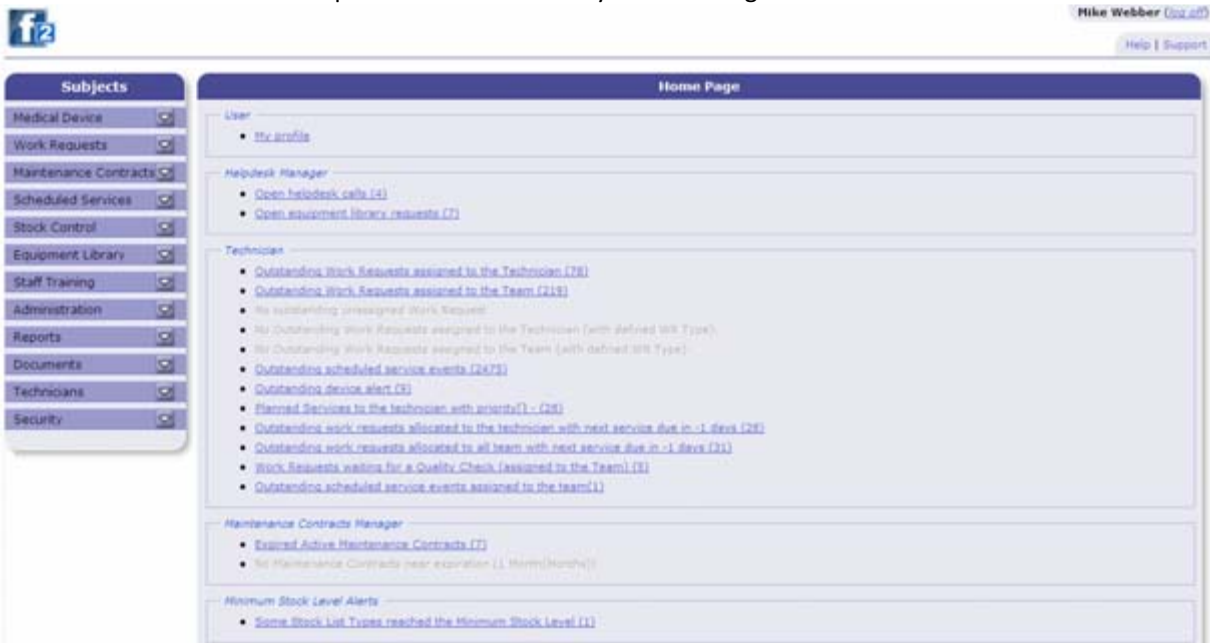
f2 also includes the following features:-

- AdHoc Reporting (via MS SQL 2008 'Report Builder' and ODBC Compliant Database Tools)
- User Customisation of Screens
- Legacy Systems Database Migration incorporating full data conversion
- Microsoft Office integration
- Extensive Data Export Capability to MS Office, PDF, XML, etc.
- UMD/GMD and Other Nomenclature Standards Ready
- Support for Bar-coding
- Technology Integration: PDA, RFID, Wireless capable
- MHRA and Manufacturer Notices
- NHSLA Compliance
- Risk-based Management
- Integration to Other Operational Systems

*Ongoing system enhancements to improve operational processing and information distribution.*

 **Screen Example - Home Page (Administrator)**

Web portal view for medical engineering administrator (assigned full security rights). Incorporates automated database alerts to provide the user with dynamic management information.

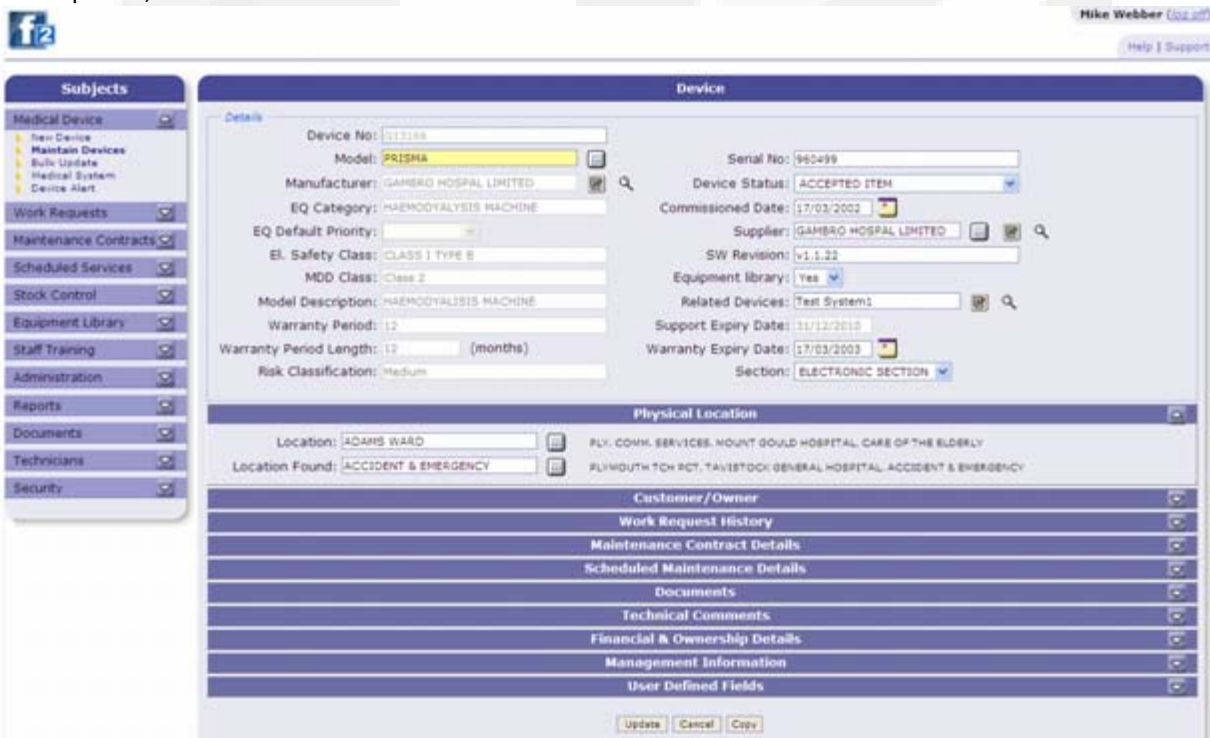


The screenshot shows the f2 Home Page for an administrator. On the left is a 'Subjects' sidebar with a list of categories: Medical Device, Work Requests, Maintenance Contracts, Scheduled Services, Stock Control, Equipment Library, Staff Training, Administration, Reports, Documents, Technicians, and Security. The main content area is titled 'Home Page' and displays several sections of dynamic alerts:

- User:** Mike Webber (log out)
- Helpdesk Manager:**
  - Open helpdesk calls (4)
  - Open equipment library requests (7)
- Technician:**
  - Outstanding Work Requests assigned to the Technician (28)
  - Outstanding Work Requests assigned to the Team (218)
  - No outstanding preassigned Work Request
  - No Outstanding Work Requests assigned to the Technician (with defined Wk Type)
  - No Outstanding Work Requests assigned to the Team (with defined Wk Type)
  - Outstanding scheduled service events (2475)
  - Outstanding device alert (3)
  - Planned Services to the technician with priority (1 - (28)
  - Outstanding work requests allocated to the technician with next service due in < -1 days (26)
  - Outstanding work requests allocated to all team with next service due in < -1 days (21)
  - Work Requests waiting for a Quality Check (assigned to the Team) (1)
  - Outstanding scheduled service events assigned to the team (1)
- Maintenance Contracts Manager:**
  - Expired Active Maintenance Contracts (7)
  - No Maintenance Contracts near expiration (1 Month(s))
- Minimum Stock Level Alerts:**
  - Some Stock List Types reached the Minimum Stock Level (1)

 **Screen Example - Device Maintenance**

Comprehensive view of the f2 device register, providing a single-click approach, via expandable drill-down panels, to all the relevant device information.



The screenshot shows the f2 Device Maintenance view for a specific device. On the left is a 'Subjects' sidebar with a list of categories: Medical Device, Work Requests, Maintenance Contracts, Scheduled Services, Stock Control, Equipment Library, Staff Training, Administration, Reports, Documents, Technicians, and Security. The main content area is titled 'Device' and displays detailed information for a device with ID 113158:

- Device No:** 113158
- Model:** PRISMA
- Manufacturer:** GAMBRO HOSPITAL LIMITED
- EQ Category:** HAEMODIALYSIS MACHINE
- EQ Default Priority:** [dropdown]
- El. Safety Class:** CLASS 1 TYPE B
- MDD Class:** Class 2
- Model Description:** HAEMODIALYSIS MACHINE
- Warranty Period:** 12
- Warranty Period Length:** 12 (months)
- Risk Classification:** Medium
- Serial No:** 965499
- Device Status:** ACCEPTED ITEM
- Commissioned Date:** 17/03/2002
- Supplier:** GAMBRO HOSPITAL LIMITED
- SW Revision:** v1.1.22
- Equipment library:** Yes
- Related Devices:** Test System
- Support Expiry Date:** 31/12/2010
- Warranty Expiry Date:** 17/03/2003
- Section:** ELECTRONIC SECTION

Below the details are several expandable sections:

- Physical Location:** Location: ADAMS WARD; Location Found: ACCIDENT & EMERGENCY
- Customer/Owner:** [dropdown]
- Work Request History:** [dropdown]
- Maintenance Contract Details:** [dropdown]
- Scheduled Maintenance Details:** [dropdown]
- Documents:** [dropdown]
- Technical Comments:** [dropdown]
- Financial & Ownership Details:** [dropdown]
- Management Information:** [dropdown]
- User Defined Fields:** [dropdown]

At the bottom of the device details are 'Update', 'Cancel', and 'Copy' buttons.

## f2 Screen Example - Work Request Maintenance Screen

Effective control of device servicing and repairs, encompassing the recording of comprehensive data for the management of this core medical engineering function.

The screenshot shows the 'Work Request' maintenance screen. On the left is a 'Subjects' sidebar with a tree view including Medical Device, Work Requests, Maintenance Contracts, Scheduled Services, Stock Control, Equipment Library, Staff Training, Administration, Reports, Documents, Technicians, and Security. The main area is titled 'Work Request' and contains a 'Device Details' section with the following fields: Work Req. No: 120044, Location found: AvON WARD, Required By: 28/08/2008, Created: 29/08/2008 16:50:45, Allocated To: MIKE WEBBER, Author: Administrator, Contact: Nurse Richards, Phone No: Ext 2233, Priority: 1, Status: Allocated, Type: Service, De-contamination Certificate: , Requisition No: XY223349837, and Work requested: Regular 6 month service via checklist. Below this is a 'List of documents' section with expandable categories: Used Parts, Labour, Test Devices, Travel, and Check List. A 'Work request summary' section displays financial data: Total Time: 2.00 (Hours), Total Cost: 102.94 (£), Total Chargeable Cost: 102.94 (£), VAT for Labour: 11.25 (£), VAT for Parts: 4.19 (£), Total VAT: 15.44 (£), and Carriage Charge: 2.79 (£). To the right of the summary are 'Fault Codes' for 1st, 2nd, and 3rd categories, with dropdown menus set to Poor, Good, and Excellent respectively. At the bottom are buttons for SAVE, Save & Complete, Cancel, and Delivery Note. The user 'Mike Webber' is logged in, as shown in the top right corner.

## f2 Screen Example - Bulk Generation Work Requests

Work Requests can be completed individually or collectively via the Bulk Completion Function

The screenshot shows the 'Bulk Generate Work Request' screen. The 'Subjects' sidebar is identical to the previous screen. The main area is titled 'Bulk Generate Work Request' and includes an 'Instructions' section: 'Set the values to be applied for all Work Requests within the Bulk Update.' Below this is a 'Details' section with fields: Required By: 23/12/2009, Created: 23/12/2009 15:34:34, Allocated To: [TSA] MIKE WEBBER, Author: Mike Webber, Type: Service, and Work Requested: Apply standard test to current equipment requiring service. There is a checkbox for 'Reset Scheduled Service Event Dates' which is checked. At the bottom are 'Update' and 'Cancel' buttons. The user 'Mike Webber' is logged in, as shown in the top right corner.

**f2 Screen Example - Customised Report for Scheduled Service Planning**

This is a typical user-defined report based on a view of planned Scheduled Service. This report has been created utilising the f2 Adhoc Report Builder and has the option of exporting to several data formats.

Device No	Manufacturer	Model	EQ Category	Hospital	Department	Location	Maintained By	Service Name	Work Instructions	Due Date
G0311	QUEST ELECTRONICS LIMITED	06300	1/3 OCTAVE FILTER	DERRIFORD HOSPITAL	MEMS	ELECTRONICS SECTION	ELECTRONIC SECTION	2 YEARLY SERVICE	CALIBRATE	27/08/2007
R14165	VIASYS HEALTHCARE LIMITED	SPAP	INFANT FLOW DRIVER	DERRIFORD HOSPITAL	PAEDIATRICS	NEO-NATAL INTENSIVE CARE	MECHANICAL SECTION	4 MONTH SERVICE	SERVICE MANUAL	27/08/2007
R14166	VIASYS HEALTHCARE LIMITED	SPAP	INFANT FLOW DRIVER	DERRIFORD HOSPITAL	PAEDIATRICS	NEO-NATAL INTENSIVE CARE	MECHANICAL SECTION	4 MONTH SERVICE	SERVICE MANUAL	27/08/2007
R2473	OHMEDA LIMITED	S60 BULLNOSE	OXYGEN REGULATOR AND FLOWMETER	MOUNT GOULD HOSPITAL	CARE OF THE ELDERLY	RADFORD WARD	MECHANICAL SECTION	6 MONTH SERVICE	SERVICE MANUAL	27/08/2007
R3510	PENLON LIMITED	RUFFIELD 200	VENTILATOR ANAESTHETIC	DERRIFORD HOSPITAL	THEATRE	THEATRE 08	MECHANICAL SECTION	4 MONTH SERVICE	SERVICE MANUAL	27/08/2007
R5335	PENLON LIMITED	OXFORD	VENTILATOR ANAESTHETIC	NOT AFFILIABLE	UNKNOWN	HYPERBARIC MEDICAL CENTRE	MECHANICAL SECTION	4 MONTH SERVICE	SERVICE MANUAL	27/08/2007
R8723	OHMEDA LIMITED	S60 BULLNOSE	OXYGEN REGULATOR AND FLOWMETER	MOUNT GOULD HOSPITAL	RADFORD WARD	RADFORD WARD	MECHANICAL SECTION	6 MONTH SERVICE	SERVICE MANUAL	27/08/2007
R9264	THERAPY EQUIPMENT LIMITED	S100 LOW START	OXYGEN REGULATOR	DERRIFORD HOSPITAL	PAEDIATRICS	CHILDRENS DAY BEDS	MECHANICAL SECTION	6 MONTH SERVICE	SERVICE MANUAL	27/08/2007

**f2 Screen Example - Active Device Report via 'Microsoft Reporting Services/Report Builder'**

Microsoft Reporting Services/Report Builder tool (part of MS SQL Server 2008) will provide the end users with the capability to produce and maintain their own reports directly from the f2 database.

Device No	Serial No	Device Status	Customer	Model	Cost	In Service Date	Warranty Expiry	
G10964	86028030489	ACCEPTED ITEM	ANAESTHETICS DIRECTORATE	8F5004E	24/11/2000	CRITICAL CARE	£269.90	24/11/2001
G2454	8F2118	ACCEPTED ITEM	ANAESTHETICS DIRECTORATE	8NAVE PLUS 5201	01/05/1995	CRITICAL CARE	£2,034.45	01/05/1996
86579	2513972	ACCEPTED ITEM	ANAESTHETICS DIRECTORATE	8F-P30	24/04/1995	CRITICAL CARE	£11,200.00	24/04/1996
G10200	22888	ACCEPTED ITEM	ANAESTHETICS DIRECTORATE	810-TENS 51601	20/11/1997	PAIN RELIEF UNIT	853.00	20/11/1998
G15548	43067	ACCEPTED ITEM	ANAESTHETICS DIRECTORATE	BODYGUARD 545	06/07/2004	ACUTE PAIN TEAM	£1,345.00	06/07/2005
G15549	43077	ACCEPTED ITEM	ANAESTHETICS DIRECTORATE	BODYGUARD 545	06/07/2004	ACUTE PAIN TEAM	£1,345.00	06/07/2005
G15541	43076	ACCEPTED ITEM	ANAESTHETICS DIRECTORATE	BODYGUARD 545	06/07/2004	ACUTE PAIN TEAM	£1,345.00	06/07/2005
G15542	43091	ACCEPTED ITEM	ANAESTHETICS DIRECTORATE	BODYGUARD 545	06/07/2004	ACUTE PAIN TEAM	£1,345.00	06/07/2005
G15543	43083	ACCEPTED ITEM	ANAESTHETICS DIRECTORATE	BODYGUARD 545	06/07/2004	ACUTE PAIN TEAM	£1,345.00	06/07/2005
G15544	43062	ACCEPTED ITEM	ANAESTHETICS DIRECTORATE	BODYGUARD 545	06/07/2004	ACUTE PAIN TEAM	£1,345.00	06/07/2005

## Client Profile

### Derriford Hospital Trust Hospital, Plymouth

Derriford Hospital is a large acute general hospital serving Plymouth and nearby areas in Devon and Cornwall. It also provides tertiary Cardiothoracic Surgery, Neurosurgery and Renal Transplant surgery for the whole of the South West Peninsula.



*Derriford Hospital - Plymouth*

#### **Mike Webber**

**Former Head of Medical Engineering, Derriford Hospital**

***“infoHealth have migrated 100% of our legacy SEMS system data into f2 and fully customised features for us”***

Derriford Hospital in Plymouth was the first Trust to implement **f2** in 2006. Mike Webber, Former Head of Medical Engineering at Derriford played a crucial role in the development of the product. The following business benefits influenced Mike’s decision to choose **f2**.

- *A pure web based application fulfilled the strategy of the Trust to distribute information within the organisation without having to install software and maintain individual PCs.*
- *The pricing model was attractive because it had no hidden costs - meaning no additional license payments were required for new software modules. At the time of purchase, the Staff Training and Equipment Library modules had not been developed, on their release the Trust were given free upgrades as part of their original capital license agreement.*
- ***f2** differs fundamentally from its competitors by taking a user / role centric approach to data which benefits the users directly, providing an easy system to navigate with instant access to the information they need. This in turn provides a better ROI for the organisation; an accessible information network increases the effectiveness of operational workflow by reducing time, effort and pain points to run a medical engineering environment.*

## Client Profile

### South Devon Healthcare Trust (Torbay Hospital)

**f2** has to date been developed in conjunction with South Devon, Cardiff and Plymouth NHS Trusts. Our working relationship with the NHS is fundamental to the **f2** development process. Peter Depla the Head of Medical Electronics at South Devon Healthcare Trust shares his **f2** experience with us.



South Devon Healthcare Trust - Torbay Hospital

What has been your association with infoHealth?

*PD: We had been working with JADe, a joint venture partner in infoHealth over the last several years. They helped support our FACTS medical devices database, providing enhancements and developing a web based library module. The problems we faced as a department was dealing with the limitations of the FACTS system and not having full confidence in the other medical device management systems on the market as replacement options. The solution was working with infoHealth to develop **f2** and through the process we were able to provide significant input to the screen layouts, the underlying business logic and data relationships.*

What do you like about **f2**?

*PD: **f2** addresses the demands for current information in the fast-paced NHS environment, involving an integrated but flexible approach to all aspects of Medical Devices Support. This includes asset management, device maintenance - repairs, scheduled service (ppm), auctioning of MHRA Medical Device Alerts, Service Level Agreements, and External Maintenance Contracts as well as invoicing. **f2** incorporates comprehensive reporting which is now essential to effective medical devices management.*

What are the benefits for South Devon Healthcare Trust?

*PD: The strengths of **f2** lies in understanding that although the management system is device centric there are requirements for a strong focus on customer lead enquiries and reporting. Being a totally web-based application allows for the ultimate in ease of deployment, with the database engine and application using the latest but equally proven Microsoft software tools.*

*We have been impressed in how the infoHealth development team listens to the customer's requirements, requests and wish lists and together prioritise to produce an agreed strategy. The time of development from initial designs to first working product has been rapid and responsive over the last 2 years. infoHealth understands the peculiarities of the NHS where each locality and Trust can operate quite differently and sometimes similarly despite being part of the single largest employer in Europe – the NHS.*

What does the future hold for **f2**?

*PD: I can see **f2** evolving into an integrated "One Stop desktop application for the busy Medical Device Support technician/department".*



## Medical Device Asset Management System Technical Requirements

### **Server Client Option** - *Suggested Minimum Specification*

Microsoft Windows Server Platform with:

Single Pentium 4 CPU + RAID + 2GB RAM  
MS Windows 2003 Standard Edition R2 (fully patched to SP2)  
MS SQL Server 2000 - 2005 - (2008 Preferable)  
MS ASP.NET (Version 1.1 and 2.0)  
MS FTP  
MS Common Files  
MS IIS 6  
Preferred Partition Disk Layout (Raid 5):  
C: System 20GB  
D: Applications 40GB  
E: Data 40GB

Microsoft Windows SQL Server 2000 / 2005 / 2008 Standard Edition & Microsoft IIS Internet Information Services

Operating system required to be installed on the local networked PCs: -  
Microsoft Windows XP Professional SP2

Software required to be installed on the local networked PCs: -  
Microsoft Internet Explorer v6 / v7

### **ASP Option (Application Service Provider)**

System running a virtual server environment  
Microsoft Internet Explorer v6 / v7

f2 has been developed using the Microsoft SQL Server relational database management system (RDBMS)



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