

Open Source Options

Version 1.0

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Open Source Software Options for Government

Aim

1. This document presents options for Open Source Software for use in Government but should not be considered to be prescriptive or definitive.
2. It is presented in recognition that open source software is underused across Government and the wider public sector, despite the current and previous administrations intention to promote its use.
3. This set of options is primarily intended to be used by Government to encourage IT suppliers and integrators to fully evaluate open source options when designing solutions and services.
4. Note that this publication does not imply preference for any vendor or product because open source software, by definition, is not tied inextricably to any particular commercial organisation. Any commercial entity can choose to support, maintain, or integrate open source software.
5. It is understood that the software market is a rapidly developing environment and any options list must be continuously maintained. However, given the lack of open source uptake, this options set is useful for encouraging IT suppliers to consider open source, and to aid the assurance of their proposals.

Context

1. The Coalition Government believes Open Source Software can deliver significant short and long term cost savings across Government IT.
2. Typical benefits of Open Source include lower procurement prices, no license costs, interoperability, easier integration and customisation, compliance with open technology and data standards giving autonomy over your own information and freedom from vendor lock in.
3. OSS is not currently widely used in Government IT, and the leading systems integrators for Government Departments do not routinely consider open source software for IT solution options, as required by existing HMG ICT policy.
4. There are significant and wide ranging obstacles to Open Source in Government. Some of these are lack of procurement guidance, resistance from suppliers, concerns about license obligations and patent issues, and a lack of understanding of open source maturity and its development ecosystem.

How to Use

1. This document presents suggestions for open source software to consider for meeting business requirements, or as replacements for closed proprietary software. References to real world significant use of the open source software are also provided.
2. This set of options can be used to:
 - a. **Inform** the design of new IT solutions.
 - b. **Suggest** opportunities for IT service or solution refreshes.
 - c. **Challenge** a proposed solution that does not use open source technology.
3. This document does not present a list of pre-approved or selected software. This document does not remove existing requirements for due diligence and assurance on the part Government. In particular it does not transfer any technology risk from IT integrators and suppliers to Government. It aims to improve the capability of Government to select the best technology from a wider set of options.

Feedback

Please provide feedback to:

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1. Server

Sector	Software	Consider as Alternative to	Comments	Real World Use
Server Operating Systems	<ul style="list-style-type: none"> RedHat Enterprise Linux Canonical Ubuntu Server CentOs Linux Novell SUSE Linux 	<ul style="list-style-type: none"> Microsoft Windows Server UNIX - Sun Solaris, IBM AIX, HP UX 	<ul style="list-style-type: none"> General purpose Unix-like operating system with proven higher performance, availability and security record. Enterprise Linux distributions are tested more than cutting edge distributions aimed at developers or home use. CentOS is a rebuilt from RedHat enterprise versions of the source code but without Redhat trademarks, and usable without commercial support subscription costs. 	<ul style="list-style-type: none"> London Stock Exchange has moved from a Microsoft .Net based infrastructure to a Novell Linux based infrastructure to improve speed and stability. Reference http://bit.ly/e2KL7w Linux powers the global Wikipedia site. Reference http://bit.ly/13ynJh CentOS is used by the Mexican Federal Power Commission. Reference http://bit.ly/hrXBgb Netcraft Survey March 2011 shows top 5 most reliable web hosting providers run Linux. Reference http://bit.ly/fyHGxK
	<ul style="list-style-type: none"> FreeBSD, NetBSD, OpenBSD 	<ul style="list-style-type: none"> Microsoft Windows Server UNIX - Sun Solaris, IBM AIX, HP UX 	<ul style="list-style-type: none"> General purpose Unix-like operating system with proven performance, availability and security record. BSDs have a particular record in 	<ul style="list-style-type: none"> Force10 routers and switches have an OS based on NetBSD. Reference http://bit.ly/fDjqZN FreeBSD used in products

			<p>internet and network services, and underly many commercial network products.</p> <ul style="list-style-type: none"> FreeBSD is considered stable and reliable and powers some of in internet's busiest sites, including for a while Microsoft's Hotmail. Reference http://bit.ly/iev6gZ 	<p>from major companies including Apple, Blue Coat, Citrix, Ironport, Juniper. McAfee and NetApp. Reference http://bit.ly/e2wFtE</p> <ul style="list-style-type: none"> FreeBSD powers busy sites including Yahoo! Reference http://bit.ly/3eCauv
Desktop Operating Systems	<ul style="list-style-type: none"> RedHat Desktop / Workstation Linux Canonical Ubuntu CentOs Linux Novell SUSE Linux 	<ul style="list-style-type: none"> Microsoft Windows XP, Vista, 7 	<ul style="list-style-type: none"> Alternative desktops are likely to be successful when their role or use is known to not require Microsoft applications. Examples are contact centre desktops with access to a web based application. 	<ul style="list-style-type: none"> 220,000 Canonical Ubuntu desktops deployed in Andalusia, Spain. Reference http://bit.ly/ghu4lg
Virtualisation	<ul style="list-style-type: none"> Linux KVM Xen 	<ul style="list-style-type: none"> VMWare vSphere / ESX / Server 	<ul style="list-style-type: none"> KVM is rapidly gaining industry support as the leading alternative to the incumbent virtualisation platforms. The Open Virtualisation Alliance which aims to promote KVM over VMWare has more than 160 members including IBM, Redhat, Intel, HP and BMC. Xen pioneered virtualisation but is considered to overtaken by KVM based platforms. Citrix offers commercial support for Xen based virtualisation. 	<ul style="list-style-type: none"> IBM uses KVM as basis for it's IaaS cloud platform. Reference http://bit.ly/d9yNqL KVM leads other virtualisation technologies in SPEC benchmarks. Reference http://bit.ly/ovT81B and http://bit.ly/vBEtu9
	<ul style="list-style-type: none"> Virtualbox 	<ul style="list-style-type: none"> VMWare Workstation, 	<ul style="list-style-type: none"> Desktop virtualisation, developed by Sun, now managed by Oracle. 	<ul style="list-style-type: none"> Oracle's VDI enterprise product is based on

	Parallels for desktop	Supports features comparable to commercial software including device passthrough. Compatible with a Vmware (vmdk), Microsoft (vhd) and Open Virtualisation Format (OVF) virtual machine images. Light client only software is ideal for development and testing environments.	Virtualbox. Reference http://bit.ly/sQHcGI
Virtual Desktop Infrastructure	<ul style="list-style-type: none"> • SPICE 	<ul style="list-style-type: none"> • Citrix 	<ul style="list-style-type: none"> • KVM with SPICE will become the strategic enterprise grade VDI offering from RedHat • TBA
Remote Desktop Access Clients	<ul style="list-style-type: none"> • rdesktop • RealVNC, TightVNC, UltraVNC • VirtualBox 	<ul style="list-style-type: none"> • Citrix ICA 	<ul style="list-style-type: none"> • Rdesktop is a client for Microsoft's RDP protocol. • VNC servers and clients enable platform independent remote desktop use. Handshaking allows interoperability between different VNC implementations. • Most clients will fall back to the common RDP protocol for accessing remote desktops virtual or physical. • TBA
Backup	<ul style="list-style-type: none"> • Amanda, Bacula 	<ul style="list-style-type: none"> • NetVault Backup 	<ul style="list-style-type: none"> • Amanda and Bacula are compatible across Linux, Unix, MacOS and Windows systems. • Corporate and public sector testimonials for large scale deployments including Belgian Government backing up 30TB. Reference http://bit.ly/gp64Jy

2. Data & Databases

Sector	Software	Consider as Alternative to	Comments	Real World Use
Relational Databases	<ul style="list-style-type: none"> MySQL 	<ul style="list-style-type: none"> Microsoft SQL Server Oracle DB IBM DB2 	<ul style="list-style-type: none"> General purpose, long established and proven. Component of established LAMP pattern stack, supporting many common patterns including Joomla, Wordpress, Drupal. Optimised for read speed. Historically not designed to be feature rich. 	<ul style="list-style-type: none"> Some of the largest and user intensive online services use Mysql, including Google, Facebook, Flickr, Wikipedia, Nokia, Youtube. Reference http://bit.ly/gzf5T7 Other users providing studies and testimonials include NASA, UN FAO, US Navy, Whitehouse.gov, New Zealand Ministry of Justice, Ericsson, Cable & Wireless, Nokia. Reference http://bit.ly/rE8XM
	<ul style="list-style-type: none"> PostgreSQL 	<ul style="list-style-type: none"> Microsoft SQL Server Oracle DB IBM DB2 	<ul style="list-style-type: none"> Long established and proven. Historically developed for feature completeness to compete with commercial databases. Features include streaming replication, triggers, table partitioning and stored procedures resembling Oracle's PL/SQL. EnterpriseDB variant aims to replace Oracle database. 	<ul style="list-style-type: none"> Large data oriented services use PostgreSQL including Yahoo!, MySpace, Sony Online, Skype, International Space Station. Unmodified PostgreSQL scaling to petabytes. Reference http://bit.ly/6ttyNn 2011 Police Crime Map site uses postgresql database. At peak demand was 220,000 requests/second.

**Distributed
Large Storage**

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|---|---|---|---|
| <ul style="list-style-type: none"> • Hadoop • HBase, Cassandra • Redis NoSQL | <ul style="list-style-type: none"> • Google MapReduce • Google BigTable | <ul style="list-style-type: none"> • Hadoop is the leading platform for petabyte scale distributed data storage and processing. It is designed to detect and manage failures in commodity compute nodes, thus not relying on expensive high-availability hardware. Compatible with MapReduce APIs. • During 2001, several commercial offering provide support around Hadoop components, or Hadoop-like components, including from EMC, Oracle and IBM. • HBase is modelled after Google's distributed database BigTable. • Cassandra developed and open sourced by Facebook provides faster large storage balanced by "eventual consistency". It follows the NoSQL concept. The multi-master architecture has no single points of failure, and zero-downtime failed node replacement. Designed for highly consistent durable storage through data centre failures. • Redis NoSQL store is governed by VMWare | <ul style="list-style-type: none"> • Hadoop is used by leading large scale operations including Amazon/A9 product search, Adobe, AOL, Baidu at 3000TB/week, Ebay 532 node cluster and 5.3PB, Facebook 1100-node cluster 12PB data, Hulu media service, IBM Blue Cloud Computing, Last.fm, LinkedIn, New York Times, Microsoft Powerset, Rackspace, Twitter, Yahoo with more than 40,000 nodes . Reference http://bit.ly/zl1Wp • Adobe, Powerset, Stumbleupon, Yahoo!, Twitter, and Facebook use HBase. Reference http://bit.ly/15mgo5 • Users of Cassandra for large data stores include Cisco WebEX, Digg, Facebook, Rackspace, Twitter. Reference http://bit.ly/g1HATc and http://bit.ly/a7li4X |
|---|---|---|---|

3. Middleware

Sector	Software	Consider as Alternative to	Comments	Real World Use
Message Bus	<ul style="list-style-type: none"> RabbitMQ JBOSS 	<ul style="list-style-type: none"> IBM MQ BEA Weblogic 	<ul style="list-style-type: none"> AMPQ is the establishing open standard for Message Queue technologies. RabbitMQ is a leading implementation. RabbitMQ can be supported by a VMWare company. 	<ul style="list-style-type: none"> RabbitMQ is used by NASA for their cloud platform, and by the BBC for its newsfeeds. Reference http://bit.ly/o77FY5
Service Bus	<ul style="list-style-type: none"> WSO2 Carbon JBOSS 	<ul style="list-style-type: none"> IBM, Oracle 	<ul style="list-style-type: none"> Java OSGi 	<ul style="list-style-type: none"> Leading Danish bank uses JBOSS ESB for mission critical applications. Reference http://red.ht/uZ6qUI
SOA	<ul style="list-style-type: none"> JBOSS 	<ul style="list-style-type: none"> BEA Aqualogic IBM ESB, IBM EII 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> IBM reference: Camden Council used JBOSS created a single view of the citizen to reduce avoidable contact with the contact centre and improve the citizen experience. Reference http://red.ht/ueg4sz Oystercard web services have been migrated to the JBOSS SOA platform with 80% cost saving, serving approx 10m customers per day. Reference http://red.ht/vhfAgY and

4. Application Servers

Sector	Software	Consider as Alternative to	Comments	Real World Use
Java Application Server	<ul style="list-style-type: none"> Redhat JBoss Sun / Oracle Glassfish Apache Tomcat Apache Geronimo 	<ul style="list-style-type: none"> IBM Websphere Oracle / BEA Weblogic 	<ul style="list-style-type: none"> JBoss implements the Java EE 6 stack. Fully featured, it supports clustering, failover, load balancing and the range of EE components including JMS, JAAS, JSP and JDBC. Glassfish supports Java EE 6 specification and is known for scalability and speed. Supports clustering and load balancing. Apache Tomcat is a popular and proven servlet container implementing the Java Servlet and JSP specifications. It is known to be embedded in commercial products. Apache Geronimo is a full Java EE suite, currently implements Java EE 5 specification. 	<ul style="list-style-type: none"> Testimonials for Glassfish include social networking sites, technology consultancies, software vendors, Peugeot Citroen, US health network, Suncorp insurance. Reference http://bit.ly/PTDz2 Siemens uses large scale physical mail processing system using JBOSS Application Server, processing 700,000 mail items per hour, with 99.8% availability. Reference http://red.ht/sjAsYb New York Stock Exchange Euronext uses JBOSS platform. Reference http://red.ht/ugXJX1 JBOSS Application Server use quoted by RedHat with the following: (i) Autotrader in the UK currently runs its high volume website and over 120 applications on JBoss Application platform, (ii) UFI / Learndirect runs online education courses and

advice sessions for up to 2 million users using JBoss technology, (iii) Siemens have built a high volume, highly performant and highly available (99.8%) mail sorting application for up to 700,000 pieces of mail per hour. Reference <http://red.ht/seYxXk>

5. Application Development

Sector	Software	Consider as Alternative to	Comments	Real World Use
Web Application Development	<ul style="list-style-type: none"> • PHP, Zend Framework 	<ul style="list-style-type: none"> • Microsoft ASP.Net 	<ul style="list-style-type: none"> • Very common component of the LAMP pattern. (Linux Apache, MySQL, PHP) • Zend Framework provides additional libraries and components for developers. 	<ul style="list-style-type: none"> • Real world uses by Cisco WebEx, NYSE Euronext, Fox Interactive Media, Fiat Group, IBM R&D Labs, McAfee. Reference http://bit.ly/o6TcFz
Code Repository and Version Control	<ul style="list-style-type: none"> • Git, Subversion 	<ul style="list-style-type: none"> • Visual Sourcesafe, Rational Team Concert, Perforce 	<ul style="list-style-type: none"> • Git is the leading distributed version control system. Support non-linear development, cryptographic authentication of histories, and is suited to the largest developments. 	<ul style="list-style-type: none"> • One of the world's largest and most distributed developments, the Linux kernel, is managed by git.

6. Cloud

Sector	Software	Consider as Alternative to	Comments	Real World Use
Cloud Infrastructure	<ul style="list-style-type: none"> OpenStack 	<ul style="list-style-type: none"> Amazon Web Services, Microsoft Azure, VMWare, Citrix 	<ul style="list-style-type: none"> Emerging standard with significant multi-vendor backing providing assurance against single-vendor lockin and failure. Primarily developed by NASA and Rackspace, now backed by AMD, Intel, Dell, Citrix, Cisco, Canonical, NTT and over 60 other organizations. Provides virtual machine management (OpenStack Compute) and storage (OpenStack Storage). Supports Xen, KVM, Qemu and Microsoft Hyper-V hypervisors. Supports the open virtual machine format, OVF, supported by Dell, Microsoft, Xensource, VMware, Redhat, IBM and Oracle. 	<ul style="list-style-type: none"> Over 60 significant organisations backing OpenStack. Reference http://bit.ly/e3AMz6 NASA production use of OpenStack components. Tier 1 ISP using OpenStack object storage. Reference http://bit.ly/eGQ4Nr
	<ul style="list-style-type: none"> Eucalyptus, Ubuntu Enterprise Cloud 	<ul style="list-style-type: none"> Amazon Web Services, Microsoft Azure, VMWare, Citrix 	<ul style="list-style-type: none"> Early re-implementation of the industry leading Amazon EC2 and S3 services for managing virtual machines. Now forms part of 	<ul style="list-style-type: none"> Puma.com and related sites use Eucalyptus. Reference http://bit.ly/hd9Dgy

				<p>commercialised cloud management offerings, including Canonical’s Ubuntu Enterprise Cloud Services.</p> <ul style="list-style-type: none">• Allows deployment , management and dynamic scaling of private and hybrid clouds (overflow capacity to public clouds, eg Amazon)• Supports Xen, KVM hypervisors
<ul style="list-style-type: none">• OpenNebula	<ul style="list-style-type: none">• Amazon Web Services, Microsoft Azure, VMWare, Citrix	<ul style="list-style-type: none">• Interoperates with Amazon EC2, ElasticHosts• Users manage via Amazon AWS compliant APIs• Allows deployment , management and dynamic scaling of private and hybrid clouds (overflow capacity to public clouds, eg Amazon)• Supports Xen, KVM and VMware hypervisors	<ul style="list-style-type: none">• OpenNebula is used by CERN which peaked at 16,000 virtual machines managing 400,000 jobs. References http://bit.ly/9SaIWZ and http://bit.ly/jiB7aE	

7. Business Applications

Sector	Software	Consider as Alternative to	Comments	Real World Use
Email Server	<ul style="list-style-type: none"> • Zimbra • Zarafa 	<ul style="list-style-type: none"> • Microsoft Exchange Server 	<ul style="list-style-type: none"> • Zimbra was acquired by VMWare. It offers email, calendar, global address lists and collaboration. It interoperates through open standards with a range of clients. • Zarafa aims to replace Exchange and integrates with MS Outlook. Provides webmail service with Outlook look and feel. Supports ActiveSync devices and Blackberry Enterprise Server. Integrates with SugarCRM, Alfresco ECM and OpenERP. Supports mail search, hierarchical storage and archiving. 	<ul style="list-style-type: none"> • Zimbra is used by NTT, Purdue University, Comcast, US Defense Department, Bechtel and Raytheon. Reference http://bit.ly/8VKcpy • Zarafa customers include health sector, local authorities, retail and manufacturing and education. Examples are Sixt, Brabantia, and Finnish municipality. Reference http://bit.ly/rGBRJB and http://bit.ly/tswL5J
Search Engine	<ul style="list-style-type: none"> • Lucene / Solr • Xapian 	<ul style="list-style-type: none"> • Microsoft FAST • Exalead • Autonomy IDOL 	<ul style="list-style-type: none"> • Lucene/Solr is a functionally capable and scalable search engine. Can index PDF, HTML, Microsoft Word and ODF formats, amongst others. Lucene/Solr's strength is in its performance and scalability. It also provides features normally only found in the most expensive search engines. 	<ul style="list-style-type: none"> • Lucene provides search capability for Wikipedia. Reference http://bit.ly/erRSEd • High traffic public websites that use Solr/Lucene include AOL, whitehouse.gov, AT&T, Ticketmaster, The Guardian, Netflix, news.com, dig, NASA PDS, eBuyer.com. Other users include Goldman Sachs, Disney, Apple, Cisco, NASA NEBULA, MTV.

Reference http://bit.ly/WIANZ				
Intranet, Portal and Internet Collaboration	<ul style="list-style-type: none"> Alfresco 	<ul style="list-style-type: none"> Mircrosoft Sharepoint, OpenText Vignette, Oracle WebCenter 	<ul style="list-style-type: none"> Alfresco founded by co-founder of Documentum and former COO of Business Objects. 	<ul style="list-style-type: none"> 30,000 public user capacity at AQA - Assessment & Qualification Alliance. Reference http://bit.ly/4FY8b8 Islington Council. Reference http://bit.ly/dh3W6i University of Westminster Intranet. Reference http://bit.ly/hlRkrX
	<ul style="list-style-type: none"> Liferay 	<ul style="list-style-type: none"> Mircrosoft Sharepoint, OpenText Vignette, Oracle WebCenter 	<ul style="list-style-type: none"> Liferay is a leading enterprise portal server. It provides functions and portlets for content management, blogs, instant messaging, SSO, message boards, calendar mail, polls, image gallery, tagging, knowledge base, asset publishing and publishing workflow. It is JSR168 compliant. 	<ul style="list-style-type: none"> Clients include Cisco, T-Mobile, Societe Generale, Barclays, French MoD, Lufthansa, Vodafone, Allianz, . Reference http://bit.ly/cd5sW3
Document and Content Management System (CMS)	<ul style="list-style-type: none"> Alfresco 	<ul style="list-style-type: none"> Mircrosoft Sharepoint, Opentext, Filenet, Documentum 	<ul style="list-style-type: none"> Alfresco is CMIS 1.0 compliant. 	<ul style="list-style-type: none"> Cisco Internet Business Solutions Group. Reference http://bit.ly/hl25Oj French Air Force document information system. Reference http://bit.ly/i8kPVZ
Records Management	<ul style="list-style-type: none"> Alfresco 	<ul style="list-style-type: none"> Mircrosoft Sharepoint, Documentum, Meridio, 	<ul style="list-style-type: none"> CMIS 1.0 and DoD 5015.02 certifications. Implements 	<ul style="list-style-type: none"> Islington Council. Reference

(EDRM)		TRIM, Objective.	Sharepoint protocol to act as substitute backend.	http://bit.ly/dh3W6i <ul style="list-style-type: none"> EADS 20,000 paper files. Reference http://bit.ly/hRJx4V
Workflow, Forms & Case Management	<ul style="list-style-type: none"> FoxOpen 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Developed by Department of Energy and Climate Change and used for rapid application development for workflow, MVC based and case handling applications. 	<ul style="list-style-type: none"> Department for Energy and Climate Change (DECC) applications include Oil & Gas Portal, FOI case management, correspondence handling. Also used by BIS, MoD, Boing and Australian Dept of Health. Reference http://bit.ly/gtU1ZY
Enterprise Resource Planning (ERP)	<ul style="list-style-type: none"> OpenERP Openbravo 	<ul style="list-style-type: none"> SAP, Oracle, Microsoft Dynamics, PeopleSoft, SAGE, SAP 	<ul style="list-style-type: none"> Open ERP is commercially developed and supported. Modular capabilities include sales, CRM, project management, stock management, accounting and human resources. Also provides vertical industry specific applications over OpenERP. OpenBravo is commercially developed and supported. Includes finance and accounting, sales, purchasing, inventory, procurement, manufacturing, projects, and business intelligence. 	<ul style="list-style-type: none"> OpenERP customers include La Poste, Veolia, Danone, Oracle. Reference http://bit.ly/ej0HHR OpenBravo 3 times winner of Infoworld software awards. Reference http://bit.ly/9K9Jyx Open bravo customers include BBVA, Coapte French healthcare, Basque City Hall. Reference http://bit.ly/mClVN
Customer Relationship Managemnt	<ul style="list-style-type: none"> SugarCRM 	<ul style="list-style-type: none"> Microsoft Dynamics, 	<ul style="list-style-type: none"> SugarCRM is a commercially successful CRM system providing sales-force automation, 	<ul style="list-style-type: none"> SugfarCRM customers from comms, financial, healthcare, public , professional services,

(CRM)		SageCRM, Salesforce	marketing campaign management, customer support, mobile device CRM and reporting.	manufacturing, technology and retail sectors include uzo (Portugal's largest telecoms provider), One Financial, HealthScreen (replacing Siebel), State of Oregon, InterAct (public safety and security), Thomas Cook, ThyssenKrupp, Avis, General Motors . Reference http://bit.ly/sEHA3M
Business Intelligence (BI)	<ul style="list-style-type: none"> Pentaho BI Suite 	<ul style="list-style-type: none"> Oracle, IBM, Informatica 	<ul style="list-style-type: none"> Includes ETL, OLAP, reporting, dashboards, workflow and data mining capability. Integrates with Hadoop for large scale data analysis. 	<ul style="list-style-type: none"> Customers include Camden Borough, US Naval Air Systems Command, Harris Computer Systems, Sun Microsystems, Specsavers, NHS Islington, Brussels Airport, Norway's TV2. Reference http://bit.ly/ehITaM
Data Integration	<ul style="list-style-type: none"> Talend 	<ul style="list-style-type: none"> IBM, Oracle, Software AG, Tibco, Progress, Informatica, Mulesoft 	<ul style="list-style-type: none"> Mature data integration tools covering file migrations, data warehousing, ETL, master data management, data quality profiling. Application integration and ESB functions. Integration with Hadoop aims at "big data" analysis. Talend is one of the largest companies with an open source business model. 	<ul style="list-style-type: none"> Customers include ebay, Deutsche Post, Allianz, ING, Alcatel-Lucent, AOL, BNP Paribas, Orange, Virgin Mobile, Sony, SNCF, Land Registry, UNHCR. Reference http://bit.ly/4odsN and http://bit.ly/4odsN
Business Process Modelling	<ul style="list-style-type: none"> Acti BPM, Intalio BPM 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> TBA

(BPM)				
Human Resources (HR)	<ul style="list-style-type: none"> OrangeHRM 	<ul style="list-style-type: none"> Oracle, SAP 	<ul style="list-style-type: none"> OrangeHRM is a corporately developed HR management system that covers leaving, joining, time management, recruitment, performance, expenses, leave, reporting. There are delivery partners across the globe. 	<ul style="list-style-type: none"> Customers include Landmark property management . Reference http://bit.ly/tMaI9s

8. Network

Sector	Software	Consider as Alternative to	Comments	Real World Use
Network Monitoring	<ul style="list-style-type: none"> Nagios, other OpenNMS Zabbix Hyperic HQ GroundWork ZenOSS 	<ul style="list-style-type: none"> BMC, CA, Orion IBM Tivoli, HP OpenView 	<ul style="list-style-type: none"> Nagios has heritage in many ISPs. Often used with the ganglia graphing system. OpenNMS is a scalable enterprise class network monitoring system. Integrates with service management Request Tracker. Hyperic acquired by VMware also supports monitoring of virtualised infrastructure. Zabbix is a mature monitoring framework with agents for many operating systems and software stacks. ZenOSS is a leading network monitoring system, deployed to 35,000 customers across 35 countries. 	<ul style="list-style-type: none"> Nagios provides monitoring for the Wikipedia infrastructure. Reference http://bit.ly/erRSEd Zabbix is used by large organisations such as DEAC IT services across four continents, leading Polish telecoms Netia monitoring 20,000 parameters, NTT Comms, large Brazilian energy company Petrobras. Reference http://bit.ly/swdGQw ZenOSS is used by Rackspace, LinkedIn, VMWare, Motorola, Los Alamos, LexisNexis, Deutsche Bank, US Army, Broadcom, Telstra, CapGemini. Reference http://bit.ly/vrdvui
Mail Transport	<ul style="list-style-type: none"> Sendmail Qmail 	<ul style="list-style-type: none"> Microsoft Exchange 	<ul style="list-style-type: none"> Sendmail has been powering email globally since the early 80s. 	<ul style="list-style-type: none">

Certificate Authorities	<ul style="list-style-type: none"> • CA-Cert 	•	•	<ul style="list-style-type: none"> • TBA
Network Scanner	<ul style="list-style-type: none"> • Wireshark 	•	•	<ul style="list-style-type: none"> • TBA
Network Services	<ul style="list-style-type: none"> • Vyatta 	<ul style="list-style-type: none"> • Cisco Integrated Services Routers, Cisco ASA security appliances 	<ul style="list-style-type: none"> • Provides network services and applications based on open source core and software, including routing, VPN. • Commercial support available. Considered cheaper than incumbents • Similar interface to Juniper JUNOS and Cisco IOS, as well as graphical interface. 	<ul style="list-style-type: none"> • Customers include Toyota, CBS, CSC, EMC, Dell, Nokia, VMWare, Rackspace, FranceTelecom, US Homeland Security, US Justice Department. Reference http://bit.ly/gbFoTu
Network Attached Storage	<ul style="list-style-type: none"> • FreeNAS 	<ul style="list-style-type: none"> • NetAPP 	<ul style="list-style-type: none"> • Provides common storage and filer services through software, but without the high performance and expensive hardware. For small scale requirements. • Services include CIFS, NFS, iSCSI, FTP. 	<ul style="list-style-type: none"> • TBA
Telephony VOIP	<ul style="list-style-type: none"> • Asterisk 	<ul style="list-style-type: none"> • Cisco Unified Communications Manager 	<ul style="list-style-type: none"> • Asterisk is a mature software PBX, covering PSTN and VoIP services. Features include voicemail, conference calling, and automatic call distribution. Protocols supported include SIP, MGCP, H323. Asterisk is known to 	<ul style="list-style-type: none"> • Customers of services based on Asterisk include US Army, Symbian Foundation, La Poste, University of Pennsylvania. Reference http://bit.ly/b8zhvN

support commercial PBX
products.

9. Web

Sector	Software	Consider as Alternative to	Comments	Real World Use
Web Server	<ul style="list-style-type: none"> Apache web server 	<ul style="list-style-type: none"> Microsoft IIS 	<ul style="list-style-type: none"> Apache is the web server behind the majority of internet websites, and has been dominant for 15 years. 	<ul style="list-style-type: none"> Netcraft survey April 2011 shows 61% of internet websites hosted by Apache, compared to 18% by Microsoft IIS. Apache serves the global Wikipedia site. Reference http://bit.ly/13ynJh
	<ul style="list-style-type: none"> Lighttpd, nginx, Cherokee 	<ul style="list-style-type: none"> Microsoft IIS 	<ul style="list-style-type: none"> High performance alternatives to Apache. Designed for performance and scalability, not for a wide range of functionality. Nginx and Cherokee have built in media streaming capability to serve you-tube like capability. 	<ul style="list-style-type: none"> Netcraft survey April 2011 shows 6.5% of the million most active sites served by nginx. Lighttpd serves static content for Wikipedia. Reference http://bit.ly/erRSEd Lighttpd is used by Youtube, Sourceforge and torrent sites facing more than 1000 hits per second. Reference http://bit.ly/g5bke7 Nginx is used by

Web Cache, Reverse Proxy	<ul style="list-style-type: none"> Squid, Varnish 	<ul style="list-style-type: none"> F5 BIG IP, McAfee Web Gateway, Zeus 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Squid cache supports the global Wikipedia and Flickr sites. Reference http://bit.ly/dJi4U1
Flash Media Player	<ul style="list-style-type: none"> JWFlashplayer Flowplayer 	<ul style="list-style-type: none"> Adobe Flash Player 	<ul style="list-style-type: none"> JWFlashplayer is compatible with media sources hosted by CDNs such as Amazon CloudFront and Akamai. JWFlashplayer also supports HTML5 playback, avoiding the requirement for Flash. This makes it compatible with non-Flash devices such as the iPhone and iPad. 	<ul style="list-style-type: none"> JWFlashplayer users include Whitehouse, Thomson Reuters, Avis, AT&T, Harvard, Intel and Nasdaq. Reference http://bit.ly/tRAwk6
Web Content Management System (CMS)	<ul style="list-style-type: none"> Alfresco 	<ul style="list-style-type: none"> Morello, Vignette/Openext, Interwoven/Autonomy 	<ul style="list-style-type: none"> Includes web authoring, workflow and publishing. 	<ul style="list-style-type: none"> Fox Broadcasting Company public site Fox.com is supported by Alfresco. Reference http://bit.ly/ffAhmW
	<ul style="list-style-type: none"> Drupal Joomla Plone 	<ul style="list-style-type: none"> Morello, Vignette/Openext, Interwoven/Autonomy 	<ul style="list-style-type: none"> Includes mature web publishing, blogs, content syndication, discussion forums, and large pool of community developed extensions. Plone is particularly suited to more complex applications, workflows. It also has a strong security record. Plone's interface confirms to accessibility standard WCAG-AAA higher than most competitors. Plone has strengths in standards conformance, access control, internationalisation, and 	<ul style="list-style-type: none"> whitehouse.gov website uses Drupal. Reference http://nyti.ms/3NmpYO Very large number of Plone customers include Brazilian Government, Norwegian Archive, Kent Connects and Kent CC, Scottish National Party, Warwickshire Police, UK MoD Defence Academy, NASAScience, Keble Oxford and Bristol University, NHS Networks. Reference

			security.	http://bit.ly/vThQAn <ul style="list-style-type: none"> Plone is also used by the FBI, US Dept of Energy, European Environment Agency, United Nations, . Reference http://bit.ly/g0Xtlr
Blog Engine	<ul style="list-style-type: none"> Wordpress 	<ul style="list-style-type: none"> sss 	<ul style="list-style-type: none"> Leading blog engine with rich functionality. Users benefit from large pool of community developed extensions. 	<ul style="list-style-type: none"> Microsoft Live Spaces migrates to Wordpress blog engine. Reference http://bit.ly/d545X0
Wiki	<ul style="list-style-type: none"> MediaWiki, tikiwiki 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> MediaWiki is the leading wiki engine. 	<ul style="list-style-type: none"> MediaWiki is the software behind global scale Wikipedia. Reference http://bit.ly/13ynJh
Web Analytics	<ul style="list-style-type: none"> Open Web Analytics (OWA) Piwik 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> OWA is a leading web analytics with support for bespoke sites and integration into WordPress, Drupal and MediaWiki. Offers campaign tracking and user in-page tracing. Piwik aims to clone Google Analytics. 	<ul style="list-style-type: none"> TBA

10. Desktop Office

Sector	Software	Consider as Alternative to	Comments	Real World Use
Desktop Office Applications	<ul style="list-style-type: none"> Libre Office / OpenOffice 	<ul style="list-style-type: none"> Microsoft Office 	<ul style="list-style-type: none"> LibreOffice is community developed and has significant development partners and momentum. OpenOffice is governed by Oracle, which was originally developed by Sun as StarOffice. The interoperability gap between LibreOffice and Microsoft Office is continuously being narrowed. 	<ul style="list-style-type: none"> OpenOffice has significant use in some sectors across the world including, Birmingham City, French National Assembly, City of Vienna, 50,000 Brazil Federal desktop. Reference http://bit.ly/bf0RFN IBM's corporate Symphony office suite is based on OpenOffice.
PDF Creation	<ul style="list-style-type: none"> PDFCreator 	<ul style="list-style-type: none"> Adobe Acrobat 	<ul style="list-style-type: none"> Creation of PDFs from any Windows application that can print. Provides more control over PDF creation than alternative "print to file" solutions. Features include digital signing, PDF/A archives, merging PDFs and encryption. Runs on terminal servers. 	<ul style="list-style-type: none"> TBA
Media Player for Audio & Videos	<ul style="list-style-type: none"> VLC, Openshot 	<ul style="list-style-type: none"> Quicktime, Adobe products 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> TBA

Project Management	<ul style="list-style-type: none"> Project.net 	<ul style="list-style-type: none"> Microsoft Project 	<ul style="list-style-type: none"> Project.net is an enterprise scale project management application. 	<ul style="list-style-type: none"> Project.net is listed in Gartner Magic Quadrant for IT Project and Portfolio Management Applications. Reference http://bit.ly/cX3O8w Customers include FT Services, Genesys Conferencing, City of San Francisco, Trak, Penn State University. Reference http://bit.ly/uORUMi
Encryption	<ul style="list-style-type: none"> GnuPG/GPG 	<ul style="list-style-type: none"> Symantec / PGP Corporation products 	<ul style="list-style-type: none"> There are several implementations of the OpenPGP standard RFC4880. GnuPG is an open source implementation and Windows interfaces are available. 	<ul style="list-style-type: none"> TBA
Email Labelling	<ul style="list-style-type: none"> Outlook plugin for email labelling from The National Archives 	<ul style="list-style-type: none"> Boldon James 	<ul style="list-style-type: none"> Outlook plugin is developed by The National Archives 	<ul style="list-style-type: none"> The National Archives
Web Browser	<ul style="list-style-type: none"> Firefox, Chrome/Chromium 	<ul style="list-style-type: none"> Microsoft Internet Explorer 	<ul style="list-style-type: none"> Firefox, which grew out of the Mozilla/Netscape efforts, became the leading browser noted for its standards compliance. Recently during 2011, Google's Chrome browser was measured to be on track to become the leading browser. Historically, Internet Explorer has been considered by many not be as standards compliant as 	<ul style="list-style-type: none"> Guardian reports that in Europe Firefox has overtaken Internet Explorer as most widely used browser. Reference http://bit.ly/fQ2hXH 2011 IE has only 38.9% user share, trends show Chrome will become dominant browser soon. http://bit.ly/rqnIQj

<p>alternative browsers. It's use of ActiveX as a mechanism has led some to consider it to have a greater attack surface. It is best practice for web developers to test against a range of browsers, with IE-only support considered bad practice.</p>				
Assistive Technologies	<ul style="list-style-type: none"> • NonVisual Desktop Access (NVDA) 	<ul style="list-style-type: none"> • Dragon 	<ul style="list-style-type: none"> • Screen reader for Windows, providing feedback through synthetic speech and Braille. Supports over 20 languages. Integrates with Internet Explorer, Outlook Express, Microsoft Word and Excel, LibreOffice and OpenOffice, Thunderbird and Firefox. Protocols supported include WAI-ARIA for web applications, Microsoft Active Accessibility. 	<ul style="list-style-type: none"> • NVDA has received significant global recognition and awards. Yahoo! Uses NVDA for testing and demonstration. References http://bit.ly/fJKfhq

11. Specialist Applications

Sector	Software	Consider as Alternative to	Comments	Real World Use
Statistics & Data Analysis	<ul style="list-style-type: none"> GNU R 	<ul style="list-style-type: none"> S/S-plus, SAS, SPSS 	<ul style="list-style-type: none"> GNU R is the leading and mature statistics and numerical computing system. It is now the established lead in academia and increasingly in industry, displacing commercial products. 	<ul style="list-style-type: none"> Gnu R is becoming the defacto statistical programming environment, as evidenced by subject texts and its use in universities.
Data Mining	<ul style="list-style-type: none"> RapidMiner 	<ul style="list-style-type: none"> SPSS, SAS PASW, SAS Enterprise Miner, MATLAB, Oracle DM, , Excel 	<ul style="list-style-type: none"> Leading data mining and exploration toolkit, providing access to proven tools, such as WEKA, through a graphical user interface. Includes text mining capability. 	<ul style="list-style-type: none"> KDnuggets leading professional newsletter for data mining sector poll shows RapidMiner as most used tool. Reference http://bit.ly/dy9XwP
Programming IDE	<ul style="list-style-type: none"> Eclipse KDeveleop 	<ul style="list-style-type: none"> Microsoft Visual Studio 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> TBA
Image & Photo Manipulation	<ul style="list-style-type: none"> GIMP Krita 	<ul style="list-style-type: none"> Adobe Photoshop 	<ul style="list-style-type: none"> GIMP is a very capable image editor and for many use cases can be used instead of proprietary software. Installers for Windows are available. 	<ul style="list-style-type: none"> sss
Desktop Publishing	<ul style="list-style-type: none"> Scribus 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> TBA

Vector Drawing	<ul style="list-style-type: none"> • Inkscape 	<ul style="list-style-type: none"> • Adobe Illustrator 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • TBA
Diagramming	<ul style="list-style-type: none"> • Dia 	<ul style="list-style-type: none"> • Microsoft Visio 	<ul style="list-style-type: none"> • Support for open standard formats such as EPS and SVG. Installers for Windows are available. 	<ul style="list-style-type: none"> • TBA
CAD	<ul style="list-style-type: none"> • QCad 	<ul style="list-style-type: none"> • AutoCAD 	<ul style="list-style-type: none"> • Simple CAD application uses AutoCAD DXF common file format. Windows installer available. 	<ul style="list-style-type: none"> • TBA
3DModelling, Rendering & Animation	<ul style="list-style-type: none"> • Blender 	<ul style="list-style-type: none"> • Maya 	<ul style="list-style-type: none"> • Comparable to commercial software, used to render production quality scenes and animations. 	<ul style="list-style-type: none"> • Feature films have used Blender for support, animation and effects. Reference http://bit.ly/huBi3R • TV commercials. Reference http://bit.ly/gA5ze2

12. Education

Sector	Software	Consider as Alternative to	Comments	Real World Use
Course Management	<ul style="list-style-type: none"> Moodle 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Learning management system for course creators and administrators. 	<ul style="list-style-type: none"> Moodle has significant use in the education sector, including Open University, Australian National University, London School of Economics. Reference http://bit.ly/gXRiAV
Elearning	<ul style="list-style-type: none"> Moodle 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> TBA

13. Health

Sector	Software	Consider as Alternative to	Comments	Real World Use
Patient Records	<ul style="list-style-type: none"> VistA 	<ul style="list-style-type: none"> --- 	<ul style="list-style-type: none"> VistA is used globally. 	<ul style="list-style-type: none"> TBA, Wikipedia has references
	<ul style="list-style-type: none"> OpenEHR 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> TBA . Brasil, UK leeds

14. Service Management

Sector	Software	Consider as Alternative to	Comments	Real World Use
IT Service Management	<ul style="list-style-type: none"> OTRS ITSM 	<ul style="list-style-type: none"> --- 	<ul style="list-style-type: none"> Includes change request and SLA management, self service, dashboards and imact reporting. Conforms to ITIL. 	<ul style="list-style-type: none"> TBA
File Audit	<ul style="list-style-type: none"> DROID 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> TNA developed for Digital Continuity Programme, DROID inventories and analyses files held by an organisation by intrinsic pattern analysis. NO known commercial competitor. 	<ul style="list-style-type: none"> TBA

