

09/05/16 OPEN SYSTEMS AND OPEN SOURCE

- Functional independence - when a system does not rely on other devices or systems to operate
- Interoperability - is a property referring to the ability of diverse systems and organisations to work together.
 - second problem of lock-in - can't move software, passport example
- Portability - when soft/hardware is changed to make them usable in different environments
- Forward and backward compatibility - Eg. MS office
- Open software standards - standard that are publicly available and have various rights to use associated with them, and may also have various properties of how they were designed - e.g. open process

Define what is meant by open source / system

- Open systems are computer systems that provide some combination of interoperability, portability and open software standards
- Open source software is computer software that is available in source code form.
- Source code and certain other rights are provided under a software license that permits users to study, change and improve the software.
- Open source based upon the ideas:
 - Free distribution
 - Distribution must include source code
 - Modification permitted
 - Integrity of author's source code
 - No discrimination against persons/groups
 - Distribution of license. One license covers all
 - License must not be specific to a product
 - License must not require other software
 - License must be technology neutral

Proprietary Software

- Proprietary, or closed systems are in effect the opposite of open systems
- Proprietary software is software licensed under exclusive legal right of the copyright holder. The license is given the right to use the software under certain conditions, but forbids from other uses such as modification, reverse distribution or reverse engineering
 - Owned by an individual/company
 - Licensed with restrictions
 - Usually support is available
 - Cost and type of license may vary
 - Huge range from SAP to Linux

Freeware

- Available at no or nominal charge
- No licenses
- May or may not be supported
- Support may or may not be free
- Wide range of software provided

Shareware

- Proprietary software
- Usually subject to copyright
- Available for a small fee
- Often stripped down version of product
- Upgrades may be free or for small price (Add-on)

The Concept of lock in

- Vendor lock in is when a customer is dependent on a vendor for products and services, unable to use another without substantial switching cost.
- For example, easy to change between milk suppliers but very difficult to change between airline suppliers
- In the computer industry, both hardware and software vendor lock-in can be used to describe situations in which there is a lack of compatibility or interoperability between equivalent components
- This can make it difficult to switch systems at many levels; i.e. application program, the file format, the operating system or various pieces of computer hardware
- This creates a situation where a lock in is often used as leverage to get market share, often leading to monopolies and antitrust action

Advantages and Disadvantages of Open Source

- Cheaper than commercially motivated products - low cost if any. It is usually free but sometimes there may be a small fee, although in comparison to proprietary software it is extremely low.
- Open Source collectively helped solve human problems I hope a year.
- Work with almost any computer \rightarrow extend the life of your hardware
- Created by straight and talented people - high quality, some people are motivated by money
- Highly reliable - firstly, they are developed by highly skilled people secondly they are worked on by hundreds of people who can find bugs and eliminate them fast
- Security is also higher with open source software as bugs hidden bugs are spotted immediately
- Customisability - instead of having to build a custom software solution from scratch, open source may have the bulk of what is needed and be able to be customized or reworked

09/05/16 OPEN SYSTEMS OPEN SOURCE

3

- Also allows you to modify and adapt the software for your specific requirements
- Eliminates vendor lock in issues
- Support options for open source are almost endless, thousands of people work on or with open source systems and the majority are able to offer support
- Help you become more flexible - Since you're not tied to a proprietary product, you don't need to abide by a specific IT architecture that might require you to upgrade your SW/hardware often you can pick and match your software and create a unique IT infrastructure that best suits your needs
- No free support - because there is no requirement to create a commercial product that will sell and generate money, open software can tend to evolve more in line with developers' wishes than the needs of end users
- If people lose interest, who will offer the code? This problem is re-iterated in service and support, what happens if a company using the software runs into problems after interest has faded?
- Staff may not want to use it or know how to use it.
- Security - also a risk - malicious users can view and exploit vulnerabilities
- May have higher indirect costs
- There is a shortage of applications that run both on open source and proprietary software. Therefore, switching to an open source platform requires a compatibility analysis of all the other software used that run on proprietary platform
- There may be many ongoing parallel developments on open source - creates confusion on what functionalities are available in which version
- User reluctance is a serious issue with open source

Obstacles hindering Open Source

- The Wintel world refers to the three proprietary software companies which have dominated their respective industries for years: Microsoft, Intel and Cisco
- In 2010, MS had 91% of operating systems market, Intel 81% of processors and Cisco 55% of router/communication market - big obstacle for open source to overcome
- Linux was the attempt by the open source movement to break the

- Windows monopoly, but in 2010 they only had 2% of the market share
- Firefox has done better in the browser market with almost 25% share in 2010
 - Lack of knowledge - non technical people are intimidated by open source
 - Even though many of these individuals may use open source software without actually realising they are, it is still a huge obstacle for open source movement to overcome
 - Lack of trust - people are wary of it because it can be abandoned at any time
 - If there is a chance an open source project is going to be abandoned, businesses are not going to want to use it for fear they would be left with no support.
 - Open source is a complicated and confusing subject
 - Problems which make the future unclear include: ownership issues, quality concerns, documentation, support, security and legal issues.
 - All these problems have slowed down the adoption of open source software; however it is still gaining

Key Open Source Products

- Mozilla - 25% market share in 2010
 - Netscape response to explorer.
- Linux - 2% market in 2010
 - 1491, GNU too slow \rightarrow (ms Torvalds)
- Apache - 60% share in 2010
 - web server software, most popular since 1996
- PHP, word press, android OS, MySQL, Domain Name Server Software