

## Open Standard

- The terms "open" and "standard" have a wide range of meanings associated with their usage. The term "**open**" is usually restricted to **royalty-free** technologies while the term "**standard**" is sometimes restricted to technologies **approved by formalized committees** that are open to participation by all interested parties and operate on a consensus basis
- The definitions of the term "open standard" used by academics, the European Union and some of its member governments or parliaments such as Denmark, France, and Spain **preclude open standards requiring fees for use**, as do the New Zealand and the Venezuelan governments



## Open Standard Definitions

- The rules for standards published by the major **internationally recognized standards bodies** such as the IETF, ISO, IEC, and ITU-T **permit their standards to contain specifications whose implementation will require payment of patent licensing fees**
- The IETF and ITU-T use definitions of "open standard" that allow "**reasonable and non-discriminatory**" patent licensing fee requirements
- **ITU-T definition:** "Open Standards" are standards made available to the **general public** and are developed (or approved) and maintained via a **collaborative and consensus driven process**. "Open Standards" facilitate interoperability and data exchange among different products or services and are intended for **widespread adoption**



## Open Standard Definitions

- Other elements of "Open Standards" ITU-T definition include:
  - **Collaborative process – voluntary and market driven development** (or approval) following a **transparent consensus driven process** that is reasonably **open to all interested parties**
  - **Reasonably balanced** – ensures that the process is **not dominated by any one interest group**
  - **Due process** - includes consideration of and response to comments by interested parties
  - **Intellectual property rights (IPRs)** – IPRs essential to implement the standard to be licensed to all applicants on a **worldwide, non-discriminatory basis**, either (1) **for free** and under other reasonable terms and conditions or (2) **on reasonable terms and conditions** (which may include monetary compensation)



## Open Standard Definitions

- **Quality and level of detail** – **sufficient to permit the development** of a variety of competing implementations of interoperable products or services.  
**Standardized interfaces are not hidden**, or controlled other than by the Standards Development Organization promulgating the standard
- **Publicly available** – **easily available for implementation and use, at a reasonable price**. Publication of the text of a standard by others is permitted only with the prior approval of the SDO
- **On-going support** – maintained and supported over a long period of time
- **European Union definition**: To reach interoperability in the context of **pan-European eGovernment services**, guidance needs to focus on open standards
  - The **costs** for the use of the standard are **low** and are not an obstacle to access to it
  - The standard has been **published**



## Open Standard Definitions

- The standard is adopted on the basis of an **open decision-making procedure** (consensus or majority decision etc)
- The **intellectual property rights** to the standard are vested in a **not-for-profit** organisation, which operates a completely free access policy
- There are **no constraints on the re-use** of the standard
- **Bruce Perens' definition:** his definition lists a set of principles that he believes must be met by an open standard
  - **Availability:** Open Standards are **available for all to read and implement**
  - **Maximize End-User Choice:** Open Standards create a fair, competitive market for implementations of the standard. They do not lock the customer in to a particular vendor or group



## Open Standard Definitions

- **No Royalty:** Open Standards **are free for all to implement**, with no royalty or fee. **Certification of compliance by the standards organization may involve a fee**
- **No Discrimination:** Open Standards and the organizations that administer them **do not favor one implementor over another for any reason other than the technical standards compliance of a vendor's implementation.** Certification organizations must provide a path for low and zero-cost implementations to be validated, but may also provide enhanced certification services
- **Extension or Subset:** implementations of Open Standards may be extended, or offered in subset form. However, **certification organizations may decline to certify subset implementations, and may place requirements upon extensions (see Predatory Practices)**



## Open Standard Definitions

- **Predatory Practices:** Open Standards may employ license terms that protect against subversion of the standard by embrace-and-extend tactics. The licenses attached to the standard may require the publication of reference information for extensions, and a license for all others to create, distribute, and sell software that is compatible with the extensions. An Open Standard may not otherwise prohibit extensions



## Open Standard Definitions

- **Embrace and Enhance**: a predatory practice in which a predominant vendor creates an implementation of a standard **with extensions that are incompatible with other systems practicing the standard**. The other systems then are incompatible with the majority of systems, which are provided by the predominant vendor. The predominant vendor uses **patents or copyright** to restrain others from implementing systems that are **compatible with the new extensions**. This creates a **monopoly lock on the standard**. The user is forced to switch to the dominant vendor's implementation in order to be compatible with the majority of users





## Open Standard Definitions

- **Open Source Initiative's definition:** an "open standard" must not prohibit conforming implementations in open source software. To comply with the Open Standards Requirement, an "open standard" must satisfy the following criteria
  - **No Intentional Secrets:** the standard **MUST NOT** withhold any detail necessary for interoperable implementation. As flaws are inevitable, the standard **MUST** define a process for fixing flaws identified during implementation and interoperability testing and to incorporate said changes into a revised version or superseding version of the standard to be released under terms that do not violate the OSR
  - **Availability:** the standard **MUST** be freely and publicly available (e.g., from a stable web site) under royalty-free terms at reasonable and non-discriminatory cost



## Open Standard Definitions

- **Patents:** all **patents** essential to implementation of the standard **MUST**:
  - **be licensed under royalty-free terms for unrestricted use**, or
  - **be covered by a promise of non-assertion when practiced by open source software**
- **No Agreements:** there **MUST NOT** be any requirement for execution of a **license agreement**, NDA, grant, click-through, or any other form of paperwork **to deploy conforming implementations of the standard**
- **No OSR-Incompatible Dependencies:** implementation of the standard **MUST NOT** require any other technology that fails to meet the criteria of this Requirement



## Open Standard Examples

- **Open hardware**

- Industry Standard Architecture (**ISA**) (a specification by IBM for plug-in boards to IBM-architecture PCs, later standardized by the IEEE)
- Peripheral Component Interconnect (**PCI**) (a specification by Intel Corporation for plug-in boards to IBM-architecture PCs)
- Accelerated Graphics Port (**AGP**) (a specification by Intel Corporation for plug-in boards to IBM-architecture PCs)

- **Open formats**

- Computer Graphics Metafile (**CGM**) (file format for 2D vector graphics, raster graphics, and text defined by ISO/IEC 8632)
- Hypertext Markup Language (**HTML**) and Extensible HTML (**XHTML**) (specifications of the W3C for structured hyperlinked document formatting)



## Open Standard Examples

- Portable Document Format (**PDF/X**) (a specification by Adobe Systems Incorporated for formatted documents, later approved by ISO as ISO 15930-1:2001)
- OpenDocument Format (**ODF**) (a specification by OASIS for office document formats, approved by ISO as ISO/IEC 26300)
- Portable Network Graphics (**PNG**) (a bitmapped image format that employs lossless data compression, approved by ISO as ISO/IEC 15948:2004)
- **Ogg** (a container for Vorbis, FLAC, Speex (audio formats) & Theora (a video format), by the Xiph.Org Foundation)
- **Open protocols**
  - Internet Protocol (**IP**) (a specification of the IETF for transmitting packets of data on a network - specifically, IETF RFC 791)



## Open Standard Examples

- Transmission Control Protocol (**TCP**) (a specification of the IETF for implementing streams of data on top of IP - specifically, IETF RFC 793)
- **OMA Data Synchronization and Device Management** (a platform-independent data synchronization protocol, specified by The SyncML Initiative/Open Mobile Alliance)
- Extensible Messaging and Presence Protocol (**XMPP**) - an open protocol for near-real-time instant messaging (IM) and presence information
- **Open programming languages**
  - **Ada** (a multi-paradigm programming language, defined by joint ISO/ANSI standard (ISO-8652:1995), combined with major Amendment ISO/IEC 8652:1995/Amd 1:2007)



## Open Standard Examples

- **MUMPS** (a dynamically typed programming language, originally designed for database-driven applications in the healthcare industry approved by ISO as ISO/IEC 11756:1992 and ISO/IEC 11756:1999)
- **C#** (a general-purpose programming language, approved by ISO as ISO/IEC 23270 and ECMA as ECMA-334)