

**EXAMPLES OF STANDARDS WIDELY USED TO ACHIEVE INTEROPERABILITY
(NOTING POTENTIAL INCONSISTENCIES WITH EIF DEPENDING ON HOW IT IS INTERPRETED)**

BSA member companies develop and implement a wide range of technology standards and routinely implement RAND-based standards, including as part of open source software, proprietary or mixed solutions. RAND-based standards in certain areas are licensed royalty-free (RF), but RF is only a subset of RAND, and RF standards in almost all instances still involve intellectual property rights and restrictions on field of use, sub-licensing or reciprocity. Contribution of state of the art technologies and participation of IPR holders is essential to the success of standardization. At the same time, companies interested in implementing a standard must be able to do so on fair, reasonable and non-discriminatory terms. Standards Development Organizations' IPR policies balance competing interests of licensors and licensees while safeguarding competition. Increasingly, products and services are hybrid, running with a blend of proprietary and open source code. Open source licenses are multiple and diverse. The most restrictive open source licenses were designed to prevent code from being used with patented technologies and therefore inherently carry tensions with the patent system. But the marketplace has found many solutions, and the problem is a theoretical one. In today's environment where almost all relevant standards are RAND or RAND/RF based, open source software has been constantly growing including in products and services implementing a wide range of standards.

Standard	Function	Maintained by Non-Profit	Available Free of Charge or Nominal Fee?	Copy and Distribute at no or nominal fee?	Patents irrevocably available royalty-free?	Free from constraints on Re-Use?
XrML	Universal markup language for expressing license rights to promote DRM interop.	No ¹	Yes	No	No (RAND)	No
ebXML	XML infrastructure for interop of e-business information	Yes (OASIS)	Yes	Yes	No (RAND)	No
3GPP	3d generation mobile phones	Yes (ETSI)	Yes	No	No (RAND patent pool)	No
DVB Multimedia Home	Interop middleware for interactive TV	Yes (ETSI)	Yes	No	No (RAND)	No

¹ Currently maintained by ContentGuard, but being reviewed for standardization by OASIS & MPEG.

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Platform (MHP)						
GSM	Mobile phones	Yes (ETSI)	Yes	No	No (RAND)	No
Simple Network Management Protocol (SNMPv3)	Network management protocol for monitoring devices attached to IP network	Yes (IETF)	Yes	Yes	No (RAND)	No
XML Configuration Access Protocol ²	Uses HTTP to read XML configuration files and retrieve elements from stored documents	Yes (IETF)	Yes	Yes	No (RAND)	No
Dynamic Host Configuration Protocol (DHCP)	Allows networked clients to obtain unique IP addresses from a central server	Yes (IETF)	Yes	Yes	NO (RAND)	No
IEEE 802.1X	Network access control through port based authentication of wireless connections	Yes (IEEE)	Yes	No	No (RAND)	No
WLAN Access 802.11 ³	Wireless access to local area networks	Yes (IETF)	Yes	Yes	No (RAND)	No
IEEE 1394	Firewire high speed serial data bus	Yes (IEEE)	Yes	No	No (RAND) ⁴	No
MPEG-2	Audio-visual	Yes (ISO)	No	No	No (RAND)	No

² See Nokia Statement on Patent Licensing (available at <http://www.ietf.org/ietf/IPR/NOKIA>); Nokia's Statement About IPR Claimed in draft-ietf-scon-cpcp-xcap-00 (available at <http://www.ietf.org/ietf/IPR/nokia-ipr-draft-ietf-xcon-cpcp-xcap-00.txt>).

³ See Telecom Italia's Statement About IPR Related to WLAN Access (available at <http://www.ietf.org/ietf/IPR/telecom-italia-ipr-wlan-access.txt>).

⁴ Portfolio license with flat fee of \$0.25/device, available through MPEG LA.

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	compression for terrestrial broadcast, DVDs, etc.					
AVC/H.264 ⁵	Video compression codec	Yes (ISO)	No	No	No (RAND)	No
MPEG-4 ⁶	Video compression for web streaming and other uses	Yes (ISO)	No	No	No (RAND)	No
OMA DRM 2.0 ⁷	Digital rights management for content on mobile phone networks	No (Open Mobile Alliance)	Yes	Yes	No (RAND)	No
VCPS	DRM for DVD-R and DVD-RW formats	No (Philips)	Yes	No	No (RF license from Philips, but RAND grantback from adopters)	No
Liberty Alliance 1.0 (ID-FF 1.0) ⁸	Interop for identity management needed for log-on and other functions	No (Liberty Alliance)	Yes	No	Maybe ⁹	No
MP3 (ISO/IEC 11172-3)	Audio compression codec	Yes (ISO)	No	No	No (RAND)	No
Multimedia Messaging System	Multimedia capability for mobile phone	Yes (Open Mobile Alliance)	Yes	Probably	No (RAND) ¹⁰	No

⁵ Also ISO/IEC IS 14496-10; audio-video format.

⁶ Also ISO/IEC 14496-2:2001 [Part 2 Visual dated 2001-12-01], 14496-2:2001/Amd.1:2002 [Studio profile dated 2002-02-01], or 14496-2:2001/Amd.2:2002 [Streaming video profile dated 2002-02-01].

⁷ DRM for mobile devices.

⁸ And ID-WSF Interaction Service v1.0; identity for web services.

⁹ Royalty-free by default, but RAND as alternative; RAND Reservations by various parties, *see, e.g.*, Necessary Claims Disclosure Notices By Citigroup, Inc. (available at <http://www.projectliberty.org/specs/Citigroupable.php>) and Sony Corporation (available at <http://www.projectliberty.org/specs/Sonytable.php>).

¹⁰ http://www.openmobilealliance.org/about_OMA/ipr.html

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(MMS)	messaging systems					
Wireless Access Protocol (WAP)	Internet access browsers for mobile phones	Yes (Open Mobile Alliance)	Yes	Probably	No (RAND)	No
10/100 Ethernet (IEEE 802.3)	Local area network protocol	Yes (IEEE)	Yes	No	No (RAND)	No
CD Audio	Audio CD player	No (Philips)	No	No	No (RAND)	No
CD-DA ("Red Book" IEC 60908)	Digital audio CD format	Yes (ISO)	No	No	No (RAND)	No
CD-ROM ("Yellow Book" ISO/IEC 10149 and ECMA 130)	CD-ROM format	Yes (ISO)	No	No	No (RAND)	No
Transport Layer Security (IETF RFC 2246)	Encryption protocol for internet message security	Yes (IETF)	Yes	Yes	No (RAND)	No
IPv6 (IETF RFC 2460)	Network layer protocol, successor to IPv4 for the Internet	Yes (IETF)	Yes	Yes	No (RAND)	No
HTTP/1.1 (IETF RFC 2616)	Communication protocol for requesting and transmitting hypertext documents in intranets or the Internet	Yes (IETF)	Yes	Yes	No (RAND)	No
Universal Serial Bus (USB 2.0)	Port interface for connecting PCs and peripheral devices	Yes (USB-IF)	Yes	No	No: Royalty free but subject to grantback and not irrevocable	No
Cardbus (PCMCIA 32 bit)	Interface for 32 bit PC cards	Yes (PCMCIA)	No	No	No (RAND)	No

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Infra Red Data (IrDA)	Communication protocol for short range infrared data transfer	Yes (IrDA)	No	No	No (RAND)	No
Bluetooth	Communication protocol for short range wireless voice and data transfer	Yes (Bluetooth SIG)	Yes	No	No (RAND)	No
WiFi (IEEE 802.11(a, b, g))	Interoperability for wireless network connections	Yes (IEEE)	Yes	No	No (RAND)	No
Serial Advanced Technology Attachment (Serial ATA)	Computer bus for high speed connection of PC CPU and storage devices	Yes (SATO-IO)	Yes	No	No (RAND)	No
High Definition Multimedia Interface (HDMI)	Interface for transfer of high definition multimedia content among consumer devices	No (HDMI Licensing LLC)	Yes	No	No (RAND)	No