Removing user constraints from digital rights management

Bridging the often-large gap between the commercial imperatives of digital content providers and the requirements of users who buy their content has been achieved by a team of European researchers.

Allowing end users to access and play copyright-protected multimedia files downloaded onto their devices, and transfer the files between devices – PCs, cell phones, PDAs, TV set-top boxes – should not in theory impinge on the intellectual property rights of the content provider (CP).

If somebody has bought a license to play a particular video or song, it should not matter to the provider where, when and how it is played provided digital rights are not violated.

In practice, however, the situation is much more complex than that. Each device has a different operating system, and the file to be downloaded needs to be coded for each system. Using current technologies this is costly and time consuming, and especially so for multimedia and cross-media files that include different digital instructions to be used for composing the same content, such as an HTML page or an educational course.

An ambitious EU-funded research project, AXMEDIS, addressed this by defining and developing new solutions and a system for automating the post-production formatting process of complex intelligent content. This makes it commercially viable to have the same multimedia and cross-media files available to download to, transfer between and play on different devices.

The project has also been focusing on the important area of digital rights management (DRM) to ensure that only the users who have paid for the content may exploit the rights specified by the licenses, and the content is protected from copying and distribution aside from the specified rights.

Importance of being automated

Says project coordinator Paolo Nesi: "Automation of production is an important focus of the project, managing the back office to automatically publish any content for the internet, TV, PDA, PC and so on. At the same time, the object needs to be protected for all channels but with only one license required."

There are two main components of the project; a software platform to be installed or the CPs' infrastructure to produce content, manage distribution and content

licensing, and a set of software media players which can be downloaded by end users onto any device on which they want to view the content.

After an initial research and development phase, AXMEDIS demonstrators were given field trials by some of the biggest broadcasting and telecoms names in Europe, including the BBC, Telecom Italia, Tiscali, Eutelsat, ELION Telecom of Estonia, and TEO Telecom of Lithuania.

These partners integrated the demonstrators in their back office, distribution channels and other parts of their value chain. Then they validated the AXMEDIS-based solutions with user groups and got their internal experts to assess the trials.

According to Nesi, feedback from the field trials and presentations were excellent at the IBC 2008 exhibition in Amsterdam, where some of the partners were able to demonstrate the new system and solutions in action, together with the AXMEDIS framework and tools.

Commercial spin-off company

A spin-off company, AxMediaTech, has been founded by some of the partners in the project and other parties, including BIXIO, SED and AFI, one of the largest associations of content producers in Italy. The new entity brings together content producers with ICT firms.

AxMediaTech will initially concentrate on re-engineering the prototype system with the aim of getting a commercial product for CPs on the market and in widespread use within two to three years. This will be a commercial operation charging the affiliated partners for the services provided, to guarantee the maintenance of the AXMEDIS framework and tools.

At the same time, a not-for-profit organisation will be working on the AXMEDIS client end to provide free media players for end users to view, play and interact with the downloaded AXMEDIS content files that the CPs are now able to automatically generate.

The AXMEDIS content objects have more in common with a DVD than with the type of digital audio or visual files accessible today. "The files can be part audio, part video, part still photos, part text, and interactive," says Nesi, with some built-in "intelligence" and user-generated content alongside AXMEDIS content.

Free tools for end users

The AXMEDIS tools developed for end users will also allow them to produce and distribute their own files. In this way, the AXMEDIS model not only protects the rights of CPs, but also allows end users the chance to protect themselves and their own digital rights.

The project has also established an affiliation programme to encourage other interested parties to develop new tools. Affiliates are able to access the AXMEDIS source code, although the project is not wholly open-source as anybody accessing the code has to be certified and their use of it is monitored.

"We don't want to be Big Brother and dictate to people, but at the same time we need to be able to guarantee to all CPs their security will be protected and their intellectual property rights will not be violated. So we have had to compromise," says Nesi.

The end result, Nesi hopes, will be the diffusion of a business model which gives end users more scope with the content/license they have purchased – share it with their family, access it on different devices, interact with it – while producers are secure in the knowledge the content is still protected from piracy and abuse.

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