



IST-2-038454

EDCINE

Enhanced Digital Cinema

Integrated Project

Priority 1

EDCINE Publishable executive summary

Period covered: from 1/7/06 to 30/6/06

Date of preparation: 10/7/07

Start date of project: 1/7/06

Duration: 36 months

Project Coordinator name: Pr. B.Macq
Project Coordinating organisation name: UCL

Revision: final

1 Overview of general project objectives

EDCINE focuses on the optimisation, enhancement and interoperability issues of Digital Cinema based future standards. JPEG-2000 compression and the 'DCI specifications' documents are the cornerstones of the project's efforts.



The 'DCI specifications' document published in July 2005 confirms the SMPTE decision to choose JPEG 2000 instead of MPEG for digital cinema coding doesn't take into account many European issues. Ref : <http://www.dcinovies.com/>

The MXF file format and security tools specifications are being adopted following the DCI studios' wishes. They lead to large files because of the lower compression rate but allow larger colour space, better resolution and bitstreams adaptable in quality and resolution. To continue to be able to project digital content, cinemas will have to comply with those requirements within a few years.

EDCINE will push the limits of the SMPTE specifications by including quality optimisation, robustness to transmission errors, content security tools, stereoscopic imaging, interactive access, forensic marking and metadata for indexing and retrieval. The project will also supply interoperability with equipments using transcoding to/from MPEG and insure end-to-end security from production to projection and to the others content distribution markets (e.g. television, mobile devices, and internet). Networked access to cinema archives allows users optimised access of video data for retrieval and downloading.

EDCINE will demonstrate that interoperable solutions between the DCI requirements and the European digital cinema needs may be found. EDCINE in particular will demonstrate the possible convergence between the DCI model and the European needs and networked audio-visual systems while keeping as much as possible the high level of perceived quality, and ensuring security of content along the distribution chain. EDCINE developments will be actively pushed at the ITU, SMPTE, JPEG and MPEG standard bodies where the partners are already active, directly or through the European Digital Cinema Forum (EDCF <http://www.edcf.net/>) and for distribution through the ISDCF ad-hoc standard discussion group for digital cinema distribution (ISDCF www.isdcf.com).

2 Project logo



3 Project web site

www.edcine.org

Note: A small summary in French is available here:

<http://www.tele.ucl.ac.be/view-project.php?id=101>

4 Contractors involved

Participant. Role*	Participant. #	Participant name	Short Name	Country
CO	1	Université catholique de Louvain	UCL	BE
CR	2	Thales Communications	TCF	FR
CR	3	Fraunhofer	FHG	DE
CR	4	Thomson Technology	THO	FR
CR	5	TDF	TDF	FR
CR	6	XDC	XDC	BE
CR	7	Digilab 2000	DIG	IT
CR	8	University of Poitiers	UPT	FR
CR	9	MOG Solutions	MOG	PT
CR	10	Thomson Grass Valley France	GVF	FR
CR	11	Winetworks	WTW	IL
CR	12	Trinnov Audio	TRI	FR
CR	13	University of Perugia	UPG	IT
CR	14	Cinémathèque Royale de Belgique	CRB	BE
CR	15	Communauté Urbaine du Grand Nancy	CUGN	FR
CR	16	Deutsche Telekom AG	DTAG	DE

*CO = Coordinator , CR = Contractor

Note 1: Following the acquisition of 100% of the SmartJog (SJOG) digital cinema distribution company by TDF, a large part of the TDF digital cinema R&D work will be handled by SJOG after the first amendment of the contract. Consequently, SJOG will become a full partner (referred to as partner #17 – SJOG) starting from the next EDCINE project contract amendment, due shortly after this report is issued. Financially, the operation is neutral with part of the TDF budget transferred to SJOG. This implies only negligible changes in the R&D work plan for the rest of the project.

Note 2: Due to a lack of human resources at MOG and to the similar resources being available at INESC-Porto, the institution which launched MOG initially (but has no financial links with MOG anymore), a part of the MOG project tasks will be handled by INESCP. Consequently, INESCP will become a full partner (referred to as partner #18 – INESCP) starting from the next EDCINE project contract amendment, due shortly after this report is issued. Financially, the operation is neutral with part of the MOG budget transferred to INESC. This implies no changes at all in the R&D work plan for the rest of the project.

5 Coordinator contact details

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6 Work performed

In the first year of the project, the detailed workplan was drafted then work started, rather logically, by elaborating the “*User requirements and general conditions*” and “*Specifications of systems and workflows*” documents that will serve as a basis for all technical R&D. Those documents are actually available to the consortium and the general public on the project website¹. The technical developments started very early on the basic ‘technological bricks’ that will be needed further during the project. Called WP2, 3, 4 and 5, those tasks focus on D-cinema format tools, security, distribution and quality assessment. The technical workpackages started their work based on those documents and are now in full activity.

Consequently, the deliverables due on months 12 were produced in due time, with a few exceptions (i.e. WP5 deliverables were erroneously stated as due M12 in the technical annex, too early in the life of WP5 to be the result of effective work; they have been moved to a more logical M18 timing). Thus, the deliverables 4.1, 5.1, 6.1, 6.3, 6.4, 6.5, 6.6, 8.1 have been produced and report the progress in their respective research domains.

The management team was installed and is now up and running. On the dissemination side, a public web site has been setup and a triple-pane leaflet printed. The web site provides news from the project and from all major events in the emerging digital cinema industry. The web site is frequently updated and provides also a password-protected area allowing the project members to exchange files, documents and programs. The leaflet has been distributed at several international conferences such as CinemaExpo and NAB. See www.edcine.org. Management deliverables 91 to 9.5 were issued.

7 Results achieved so far and expected end results

¹ <http://www.edcine.org/documents/public>

As the development of Europe-friendly digital cinema standards and tools is our main focus, we already participated to several JPEG2000 and SMPTE meetings and phone conferences. We made already some proposals and we started to disseminate our project name, goals and agenda to the major actors in the field through direct talks and presentations, the web site and the leaflet.

The expected end result of the EDCINE project is to present at the end of 2009 a set of digital cinema tools and standards that will make digital cinema more commonplace and more affordable to the European users than what is expected (or feared !) today. A demonstrator gathering all the EDCINE developed technologies will be setup under WP7 to assess the reality and the interoperability of those technologies in real set-up established in Nancy; the city of Nancy is the end-user partner of the EDCINE consortium and managed to find a suitable set of places including an operating centre and a few cinemas.

8 Goals and impact

- EDCINE will develop enhanced standard compliant Digital Cinema systems, aiming at enforcing European technological competitiveness in this field but also at providing solutions more in line with the European needs.
- EDCINE will study and propose standard extensions allowing MPEG compressed content to be used in specific cases with the same security and interoperability as the JPEG 2000 based content. This will make digital cinema affordable to millions of European users in small communities. It will reduce the cost barrier to local productions distribution to a level acceptable by the smaller venues in the most remote areas of the union while keeping quality at a suitable level.
- The work done in EDCINE will concentrate on images, but will also pay attention to sound, subtitles and metadata for the storage, transmission and archives. Interoperability issues in the project will cover transcoding issues between JPEG2000 on one side and MPEG and other standards for reuse of cinema content in other, lower quality devices while keeping the whole set-up secure.
- The DCI specification existence is good for the industry as it pushes for a quick consensus around a single recognised standard. However, it is strongly biased by the Hollywood studios' point of view and doesn't take into account the economic, cultural and linguistic specificities of the rest of the world (as the Americans say). In Europe, the existence of small networks of arthouse cinemas distributing lots of locally produced movies is more than often incompatible with the US requirements of big size and top quality achievable by large commercial multiplexes. Versatility, ease of production and distribution, including in multi-lingual versions and in digital rights management should be increased by a large amount if the European needs are to be satisfied. The pragmatic approach of EDCINE will bring on the SMPTE discussion table realistic proposals to reach a more Europe-conscious compromise.