

Research Project „Digital Cinema“
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Research Project *Digital Cinema*

*Funded by the Swiss Foundation for Technology and Innovation
in collaboration with*



and the academic institutions

*University of Art and Design Zurich HGKZ
Swiss Federal Institute of Technology EPFL
University of Basle*

Digital Cinema, A Research Project

"Digital Cinema" is a research project by the Federal Commission of Technology and Innovation (KTI) in collaboration with Swiss universities and Swiss industry partners. The industry partners are Swiss Effects and Sony, the three university partners are: the University of Art and Design Zurich (HGKZ), the Swiss Federal Institute of Technology Lausanne (EPFL) and the University of Basel, Department for Image and Media Technologies

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Project description

Research Goals

In the course of the 18 months long project, a digital research laboratory will be installed. The research team develops custom procedures in combination with existing technologies to create a work flow which covers all aspects of post production including editing, color processing and timing within the economic constraints of the European film industry. The digital lab will be an interface which will allow transfer between all formats, from analog to digital, from chemical to electronic and vice versa. The performance of the laboratory will be tested and used on a Swiss fiction film to be shot and processed on HD using the 24p HD-Cam developed by Sony. Finally the digital data will be printed on 35mm film and projected in cinemas all over the country. This experience allows the scientific and technical team to analyze real-world conditions for research and development.

The main topics of the application-oriented research project "Digital Cinema" can be described as follows:

- The relationship between technological innovation and production:
How are production work flow and aesthetic output influenced by technological innovations? What creative solutions are the new format asking for? Will there be new and undiscovered means of expression?
- The economical aspect:
What adaptations are needed to integrate the digital format within the given economic context?
- The evaluation of missing links:
The specific economic conditions of the European movie industry have caused European companies to concentrate on economic specializations and to develop customized and individualized know-how. One of the most important goals is the development of special tools and software interfaces in order to cover all steps from data acquisition to post production, including frame rate

conversion, noise reduction and color management. This research team invents the missing links in order to establish a productive environment for the motion picture industry.

The Services of the Project Team

- Adaptation of the digital format to the needs of the European film market
- Introduction of the digital format in a traditional European film laboratory
- Introduction of cost-effective A/D and D/A transfer methods
- Training of film technicians and filmmakers
- Publication of the results in professional and research magazines
- Transfer of know-how in conferences and workshops
- Supporting the acceptance of the digital film technology in the European film market
- Application of digital image processing in specialized markets
- Long-term storage of digital images
- Digital reversion of color fading

The Project Partners and Their Project Relevant Know-how

It is the intention of the Commission for Technology and Innovation KTI, that the project partners are situated in both business and universities. The following partners are involved in the research project "Digital Cinema":

Business partners:

- Swiss Effects, a company with its headquarters in Zurich has representations in Paris and in New York. Swiss Effects is a motion picture laboratory, which is well known not only in Europe, but also in the United States. They have profound experience in complex transfer processes (especially video to film transfer) and integration of special effects in traditional feature and documentary film productions. Their business philosophy is to offer a project-oriented and individualized work flow using collaborators who do not only regard themselves as technicians, but also as designers and creators, in order to precisely react to specific and unusual wishes of each customer. Swiss Effects has also developed in-house tools to combine working environments both in a flexible and cost-effective way.
- Sony is one of the worldwide leaders in electronic image processing and has high-level competencies in development and application of technical equipment for recording, processing, post-production and distribution in the digital domain. The main subject of the collaboration with Sony is the practical exploration of the digital format in feature film projects. Sony will support the production of a Swiss feature film with material and knowledge. Their digital

high definition camera HDW-900 and digital recorder HDW-F500 are going to be used for the shooting of the pilot film. A member of the research project will support the camera team on the set.

Academic institutions:

- The University of Art and Design has a long tradition in production and research in the domains of art, of film and of product and graphic design. Since 1989 the Film and Video Department offers a project-oriented training in filmmaking. The students explore new ways of cinematic expression together with new technologies and use them in a free and creative way in their film projects. Many diploma films and first films after the university training have achieved national and international recognition.
- The Audio Visual Communications Laboratory at the Swiss Federal Institute of Technology provides basic research on the subject of digital image processing. The team analyses physical properties of color accuracy and resolution for the elaboration of reference values in quality control and the definition of standard calibration settings. Furthermore the researchers at the EPFL explore physiological questions about human perception systems in order to develop methods for data compression.
- The Department for Image and Media Technologies at the University of Basel conducts basic research regarding the questions of image storage and restoration. They made a profound study on the chemical foundations of color fading. The result of this research is a user-friendly computer interface for the digital inversion of chemical aging processes in photography. The research team also provides their long-standing experience in handling vast amounts of image data.

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