

FIE Handbook of Regulations, Video Refereeing

INTERNATIONAL FENCING FEDERATION

HANDBOOK OF
SPECIFICATIONS

Video Refereeing



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SEMI
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Any video refereeing system which is used in FIE competitions must have been homologated by the FIE SEMI Commission and have received the agreement of the FIE.

1 Goal

Fencing is a head-to-head sport inspiring people with powerful dynamics, complexity and quickness. Technical tools including the electronic scoring machine and the video replay system have become a standard in International Fencing.

1.1 Must-have features

If the video replay system is used for analysis purposes during a fight, it needs to meet the following minimum requirements:

- Recording of complete fights in high definition (native 16:9-Resolution of minimum 720 rows)
- Recording framerate at least 24 frames per second
- Direct connection of the video replay system to any of the electronic scoring machines officially approved by the FIE to receive the scoring protocol
- Data that need to be gathered synchronized with the video: hits, signal lights, fight time and scores
- Automatic replay functions
- Variable replay speed between 10% and 100%
- Selective availability and direct access to individual hits or actions (History Function)
- User interfaces for the first and second Referee for individual navigation in the video clip
- Possible camera distance up to 50m away from the fencing piste
- Sound for realtime AND slow motion loops
- Archiving of videos including audio on state-of-the-art recording media (DVD, Blue Ray)
- Integration of recorded video clips in FIE database¹ including results, competitors names

¹ vide section 3.3. FIE Handbook of Specifications, Video Refereeing

1.2 Additional features

The system should be extendable with the following features:

- Live streaming of the video clips including all fight-relevant data as graphics or data feed
- Option to implement meta data protocols (for example names and results either manual or by connecting it to the competition management software)
- Provision of video signals either live or with a time delay to TV, Internet, on-venue result systems and video walls

2 Use of the product

2.1 Field of application

See article t.42.3 of the FIE technical rules.

2.2 Rulebook

A referee monitoring the video shall be assigned to each piste supporting the main referee. If local conditions allow, and if 2 fencing pistes can be fully monitored from a central position, one video replay referee may monitor 2 pistes at the same time.

All clips need to be stored for possible post-competition Refereeing Commission analysis or protests.

If the video replay system fails due to technical problems, it is the sole responsibility of the Referee to decide if the athlete in question receives a score or not.

3 Product environment and features

3.1 Hardware

The video replay system must be capable of being set up and operated on at least 4 pistes plus the Finals piste. The video is produced in high definition with a native 16:9-Resolution of minimum 720 rows. Standard formats include 720p, 1080i and 1080p. The cameras need to be able to record 24 full pictures per second. The cameras need to be aligned to ensure that they can cover the entire Fencing piste at any time. Due to different conditions at the indoor arenas and to keep a clear Field of Play, the distance between camera and Fencing piste could be up to 50m and more. Video recording, processing, and video output shall exclusively in HD. Each Fencing piste equipped with video replay needs to feature at least **1** review monitor for the Referees. **This** monitor is to be set up centrally in a distance of approx. 2m from the piste. In addition, the main Referee needs to have free sight onto the monitor. The monitor needs to have a screen diagonal of at least 19” with a minimum resolution of 1280 rows.



Figure 1: Review screen of the main referee

3.2 Software

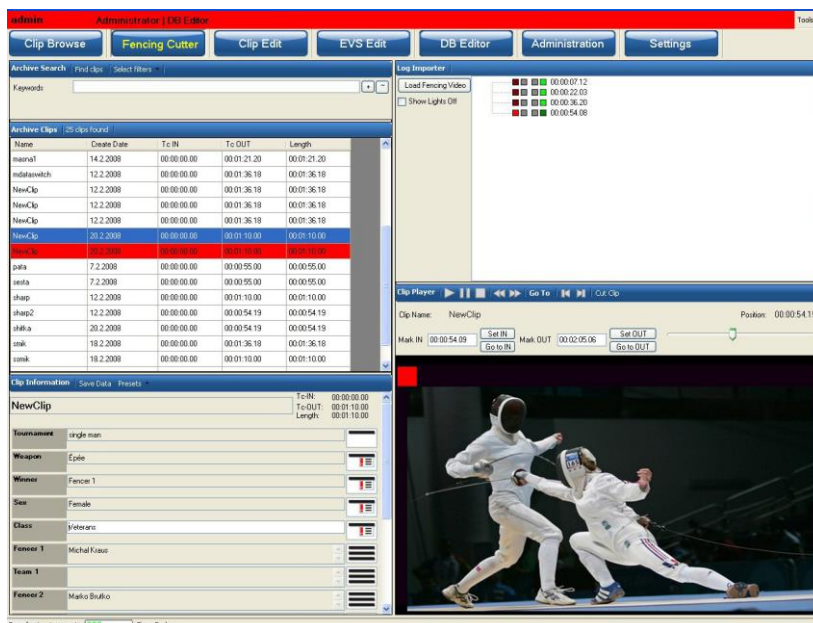
The control software of the video replay system should be intuitive and should have the following features (minimum requirements):

- Adjustable video replay speed between 10 and 100%
- Standard slow motion replay speed should be between 25 and 30%
- System needs to be capable of replaying the scenes in real time
- Availability of recorded scenes during and after the fight (history list)

For archiving and analysis purposes, it is crucial that the entire fight including sound is recorded. The system is mainly controlled by the connected scoring machines sending their input to the system via data interface.

3.3 FIE Video Database Requirements

Especially for the documentation, trainer and referee education the FIE introduced a global video database. It contains the possibility to import video files from Competition Replay systems directly in a database and to sort there according to own categories. During the competition, the used Arbitration systems have to store some further information (metadata like scores, hits, time, competitors names and so on) according to the video. After recording, information like lights, hits, time scores, fencers names and round are available in the Database fencing player.



3.4 Setup and integration in the arena layout

Using the video system must not imply any disadvantages, delays or hindrance to the athletes and common processes of the entire competition.



Figure 2: Sample setup of a video referee workplace covering 3 pistes

3.5 Screen of the computer

The computer needs to have a screen diagonal of at least 19".

In case a Notebook is used, a screen diagonal of at least 15" is required.