



MBI's solution for digital cinema

Introduction

MBI is a private Italian ICT company based in Pisa that operates in the field of multimedia content processing over heterogeneous networks. MBI has designed and created a solution for secure transmission of files of any type and size in *push* mode, i.e. based on an *Operating Centre* that transmits scheduled content at scheduled times, as opposed to the *pull* mode, which is typically used by on-demand systems over the Internet.

MBI's solution is based on the transmission of data to a group of receivers at the same time (*multicast*). The method is to transmit the data once only, thus avoiding repeated transmissions of the same content and therefore minimising the use of network resources, unlike many on-demand systems based on the *unicast* model.

The solution can be used with terrestrial, wireless or satellite networks. Since the satellite network is *broadcast-based*, it is the most suitable for multicast transmissions.

Our solution has been used for many years as the base component of the Opensky platform by Eutelsat, one of the world's leading satellite communication operators. Using the Opensky platform, Eutelsat provides satellite broadband connectivity and distribution systems for content of any type and size.

The solution is based on a platform, called *Multimedia Delivery Framework (MDF)*, which has the following main functions:

- Content acquisition in an operating centre
- Content registration and storage in a secure storage area
- Transmission scheduling
- Secure content transmission
- Content delivery on enabled devices
- Device control and monitoring

The solution is highly flexible and reliable and it is therefore especially suited for transmitting large files (e.g. high-definition multimedia content) over

satellite. Given its features and functions, MDF can successfully be used for distributing digital content to cinemas.

In fact, film digitisation, distribution and projection can easily be combined with MDF, which can distribute multimedia content (i.e. HD films, playlists, any type of extra data) to a high number of cinema devices, according to the subscription criteria.

The solution increases the producers', distributors' and managers' potential income, and does not affect the business models involving the partners, as its sole purpose is to:

- substitute the existing film distribution management
- reduce transmission cost and risk
- guarantee content transmission at the scheduled times
- enable easy advertisement insertion

Key features

- **Reduced cost and risk as compared to distribution on hard discs**
Content delivery over satellite is guaranteed on time. The distribution cost is dramatically reduced, as is the risk of hard discs getting lost or being damaged in transit
- **High flexibility in creating the film programmes**
The content can be stored on-site and transmitted many times. Therefore, cinema operators can easily adapt the film programmes to their own needs, the cinema location and the time of year
- **Secure distribution procedure:**
 - The transmitted content can only be received with specific software that will be installed on computers that work as receiving terminals
 - Only registered terminals will work correctly. Unregistered terminals will not be able to receive any content
 - All content transmitted is encrypted and the registered terminals need to be enabled for decryption

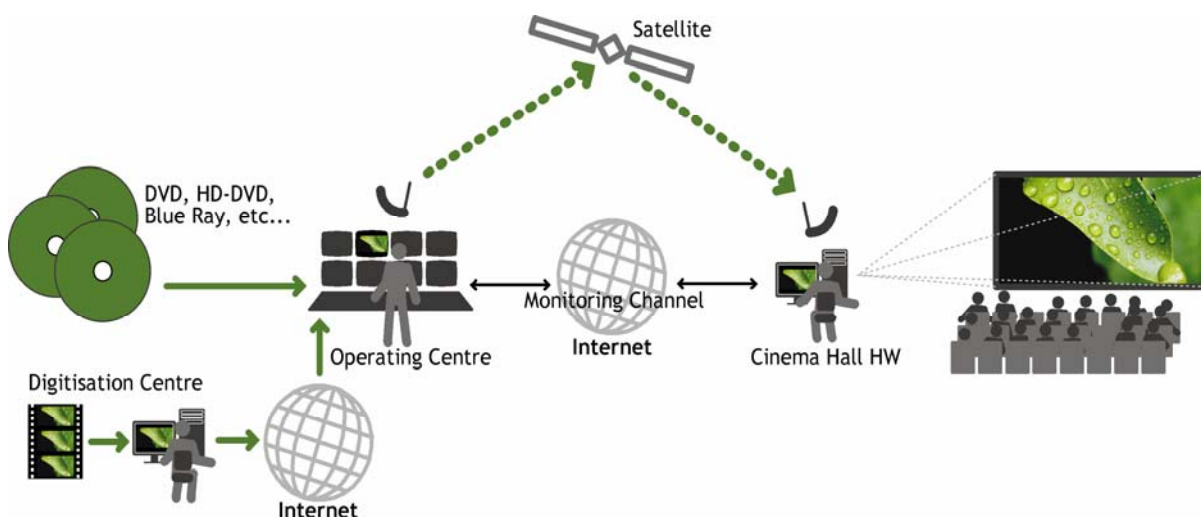
- **All types of content can be managed** The system can distribute all types of content acquired from any type of storage device (HD-DVD, Blue Ray-DVD, etc.) and encoded with any type of encoding standard (MPEG-2, MPEG-4, WM9, JPEG2000, etc)
- **The solution is separate from digital rights management systems** Digital rights can be managed and added to the transmitted content by any *Digital Rights Management* (DRM) system. As rights management is carried out during content reproduction only, DRM has no impact on content transmission and delivery, which are carried out independently of the DRM system used.
- **High flexibility in creating new business scenario** The relationships between the partners involved will not be changed by introducing the new distribution means. In addition, the flexibility in creating film programmes with the innovative distribution system enables the creation of new business models
- **Local commercials can easily be added to the playlists** Playlists can be "personalised", added to the extra content of the film and, once received, personalised with advertisements at several points during projection
- **Reduced advertisement costs** Extra advertisement content can be received (e.g. playbills) and displayed on other monitors in the cinema (e.g. near the ticket windows, at the bar, etc.)
- **A variety of devices can be used in the cinemas** The solution is software-based and works on common hardware systems with standard operating systems. The system can be managed and updated by remote.
- **Reduced device costs** Minimal resources are required for the local storage area
- **Simplifies and reduces operator's workload:**
 - easy-to-use interface (only two hours of training required). Hard discs and coils are no longer necessary
 - No monitoring by on-site staff required
 - Remote support and monitoring in the case of delivery problems

The MDF system

The **MDF system** - *Multimedia Delivery Framework* - is a complete software solution for transmitting multimedia files in push mode over IP networks configured for multicast protocols.

Overview

It is made up of a Server component, which will be installed in the Operating Centre and will handle the content distribution service over satellite; and a Client component, which will be installed in the cinemas and will receive the transmitted content



The Operating Centre can acquire digital content stored on any type of storage device (HD-DVD, Blue Ray-DVD, etc.) and encoded with any type of encoding standard (MPEG-2, MPEG-4, WM9, JPEG2000, etc). If the amount of content is high enough to cover the cost, a dedicated channel can be used to connect the Operating Centre to the Digitising Centre.

The Operating Centre encrypts the content and transmits it over satellite to the enabled cinemas, where it is stored on hard discs. The content can then be played out as often as needed.

The Operating Centre

The Operating Centre is made up of the following modules:

- MDF Server, which handles content scheduling and transmission

- *CAS - Conditional Access System*, which guarantees transmission security by encoding the content in such a way that only registered and enabled terminals can receive it
- A large storage area to protect and save the content so that it can be available online every time it needs to be (re)transmitted
- A network management system for controlling and monitoring the devices installed in the cinemas

Operators of the Operating Centre will be able to carry out the following actions on a series of interfaces:

- Acquire digital content and save it in the storage area
- Create parameter-based playlists to be transmitted with the content
- Add extra data to the content (e.g. film plots, cast lists, comments, etc.)
- Schedule and check the content transmission (including extra data)
- Transmit the content to all receiving terminals in a secure way
- Check the content transmission and delivery
- Monitor the transmission devices installed in the cinemas to support the Cinema Kit operator

Cinema Kits

The MDF system requires the following components to be installed in the cinemas:

- The *MDF client* software installed on the hardware that will receive the content transmitted by the Operating Centre
- If satellite transmission is to be used, a satellite receiver needs to be installed (one-way or two-way) and configured to receive the signal from the satellite/transponder
- A server with a storage area large enough to store at least one film (most of the PCs available on the market meet this requirement)

- A terrestrial connection channel (preferably ADSL, but ISDN or PSTN can also be used) to connect the reception terminal to the Operating Centre for monitoring and remote controlling

Cinema Kit operators will be able to carry out the following actions on an easy-to-use graphical interface:

- View the content being transmitted
- Request the content
- Monitor the content delivery
- Save the content in the local storage area
- Edit the playlist and add any advertisements