Digital Watermarks:
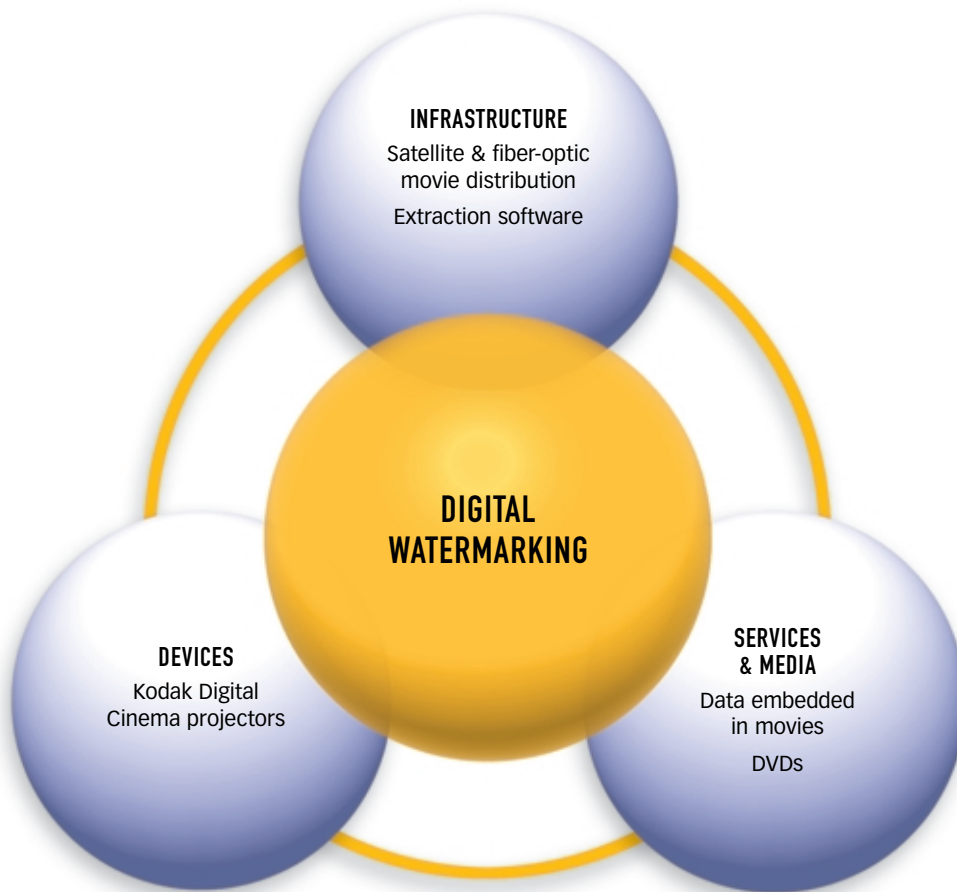
'FINGERPRINTING' MOVIES TO THWART PIRACY

According to the Motion Picture Association of America, movie piracy costs studios more than $3 billion in lost revenue each year.

OVERVIEW: BEFORE INFOIMAGING

Despite extraordinary advances in technology, the motion picture industry has yet to eliminate a very costly problem—movie piracy. The Motion Picture Association of America estimates that the industry loses about $3 billion in revenue each year to bootleg copies of first-run theatrical releases. Those pirated films often are made by using a camcorder to record a movie as it is being projected in a theater. At Kodak, Research & Development scientists have been working on a technology called digital watermarking that can be used to identify illicit copies of movies and help track down and put a stop to piracy.

INFOIMAGING IN ACTION

Here's how it works: A movie is distributed electronically to theaters by satellite or fiber-optic networks (infrastructure) or in the form of DVDs (media). When the movie is shown, a Kodak Digital Cinema projector (device) continuously embeds a small amount of data (media) into the movie. Each showing of the movie is given a unique, invisible digital watermark identifying the date, time and theater of that particular showing. So if a camcorder is used to capture that movie, the video-tape also records the invisible digital watermark embedded throughout. As a result, a series of frames from a suspected bootleg copy of a movie can be examined using software (infrastructure) that extracts the watermark data to determine the time and place of theft, which can help with the apprehension of movie pirates.

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Kodak

INFRASTRUCTURE
Satellite & fiber-optic
movie distribution

Extraction software

DIGITAL
WATERMARKING

DEVICES
Kodak Digital
Cinema projectors

SERVICES
& MEDIA
Data embedded
in movies

DVDs

Kodak's Entertainment Imaging will make this watermarking capability a standard feature in its digital projectors, which are scheduled for shipment in 2003.

INFOIMAGING'S IMPACT

> Kodak's Entertainment Imaging will make this watermarking capability a standard feature in its digital projectors, which are scheduled for shipment in early 2003.

> Kodak digital watermarking shows exceptional performance on still images as measured by the StirMark industry standard, scoring 99 percent, compared to the closest competitor's 78 percent.

> Kodak recently demonstrated an industry milestone: the extraction of 16-bit digital watermark data from as few as 15 frames—and sometimes only one or two frames—of a movie copied with a camcorder.

For more information about infoimaging, go to:
www.kodak.com/go/infoimaging

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