



# Frame rate conversion - the InSync difference

## Introduction

Maximising audience engagement across multiple platforms is now fundamental to all broadcasters, content owners and distribution service operators. Content production is costly and maximising effective use is essential, so it's critically important to maintain a high picture quality when transforming your content into new frame rates for international distribution.

It's widely accepted that motion compensated frame rate conversion gives the best results when transforming content between different international standards, but not all motion compensated converters are the same. Read on to discover how the InSync difference can benefit your audience experience.

## Why is frame rate conversion difficult?

Modifying international or film-rate content so that it can be seamlessly incorporated into programming schedules typically requires deinterlacing, temporal frame rate conversion and rescaling.

Picture quality must be preserved at every step as the smallest error introduced early in the process will propagate and become more visible. Deinterlacing, in particular, requires sophisticated moving/still adaptation to avoid artifacts such as jagged diagonals, blurred objects in motion, and highly irritating "line twitter".

Temporal frame rate conversion using motion compensation relies critically on accuracy of the motion vectors used to estimate each object's trajectory. Erroneous or inaccurate motion vectors can result in highly visible picture defects.

FrameFormer from InSync uses proprietary finely-tuned algorithms for motion detection and motion vector estimation which help it stand out from other software converters.

## Does your repeating detail take on a life of its own?

Weak motion analysis can lead to unpleasant defects, especially in areas of repetitive detail, such as fence posts or the windows of buildings. If a moving periodic area is classified as static, or a stationary repeating pattern is classified as moving, erroneous motion vectors will be generated. Where this analysis is inconsistent, visually disturbing artifacts can arise which are all the more annoying to the viewer as they change from frame to frame. FrameFormer from InSync utilises enhanced analysis modes which ensure that your periodic structures are consistently correct throughout your sequence.

## Does fast motion upset your objects?

Objects in fast motion will have relatively more spatial displacement from frame to frame, requiring much larger search areas for valid vectors. Many converters will be unable to find a suitable vector and may introduce visible artifacts by projecting the wrong content into a picture area. Alternatively, the converter may fall back to a linear averaging mode which blurs the object. FrameFormer from InSync provides consistent clean frames, even in areas of fast motion.

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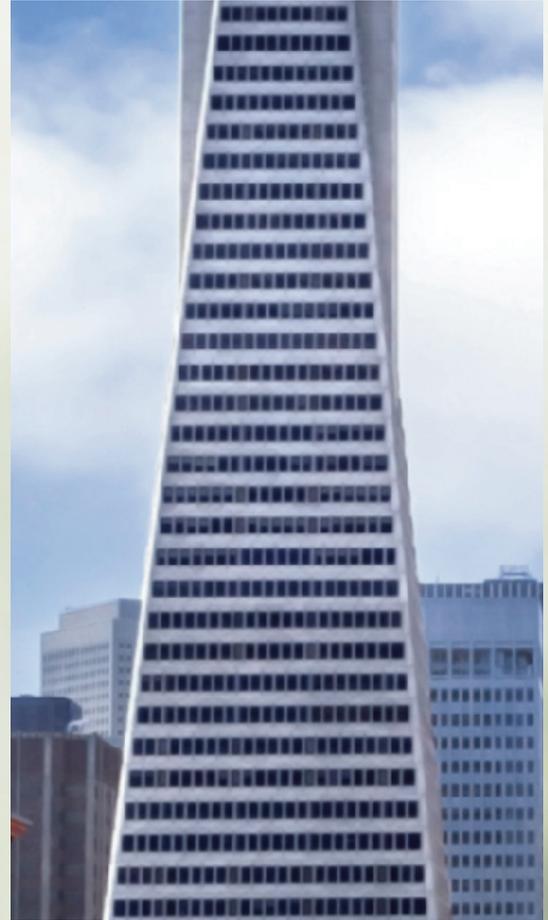
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**Other converters:** problems in areas of repeated detail



**InSync:** consistent, accurate conversion of periodic detail



**Other converters:** blurring in areas of fast motion



**InSync:** consistent, clean conversions

### Does your conversion software limit your freedom?

Typical conversion software solutions only run on specific or proprietary hardware platforms and may demand use of predetermined GPUs. Once engaged by the conversion process those processing units are no longer available for other functions. such as graphics or encoding.

FrameFormer's CPU-only architecture allows infinite flexibility in deployment, in Cloud, Windows, Mac and Linux environments. You can choose how many processing cores you want to apply to your conversion, leaving the rest of your resources available to service your priority workflow needs.