Background

Surround audio technology has now become commonplace in the home, adding to the home movie experience by surrounding the viewer with an audio landscape that matches with the action in the film. To investigate the possibility of providing a similar enhancement for video, members of the Production Magic team were challenged, as part of an innovation exercise, to see if they could come up with a Surround Video prototype system. The prototype was created over the course of 5 days work, from the initial concept, system development, through to filming and first demonstration.

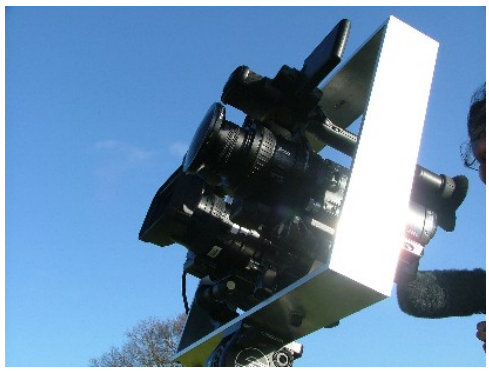
Current work

The basic concept for the Surround Video prototype was to enhance the viewer's experience by providing additional background context to the scene by projecting a 180 degree view of the current scene, in addition to that on the existing television display. This image is projected over the walls, ceiling and floor in order to fill the viewer's field of view and is designed to line up with the main image on the traditional display. This surround image will inevitably be displayed at a lower resolution and brightness but is designed not to be a point of interest in itself, but to give extra motion cues and background context in the peripheral view of the audience. The main point of interest remains the traditional display and the surround video works as an optional extra.

System components:

- Video is captured using two HD cameras mounted together; one with a standard lens framed for the traditional TV shot and the other with a fisheye lens to give a wide field of view for the surround image. The relationship in field of view between the two cameras must remain fixed in order for the final displayed images to remain lined up.
- The fisheye surround image is processed at display time on a PC to correct for the lens distortion and to adapt the image to suit the layout of the room.
- To display the surround image a hemispherical mirror is used to reflect the light from standard projector over a 180 degree angle; alternatively a projector with a fisheye lens could be used.
- Existing content can be enhanced using basic synthesised surround images.

Surround Video being demonstrated



Camera Rig with standard and fisheye cameras

Future work

- Gain feedback from potential internal and external partners.
- Create an automatic setup for adapting surround image to suit the room environment.
- Look at adapting projected surround image colour and brightness to correct for the varying surfaces of the walls, floor and ceiling.
- Investigate the implications to production and 'shot grammar'.
- Investigate replacing the dual camera set-up with a single ultra high definition fish-eye camera.
- Investigate transmission and coding issues.