WhitePaper
Dark Space Media® cinematographic environments ver. 1.0

"for a near-perfect projection environment"

Instead of using traditional home-cinema technologies, Van Welleman Villas® opted to use Dark Space Media® technologies to create the very best cinematographic environments possible. This unique approach -a worlds first in the residential environment- is all about the creation of the ideal optical environment for the projection of images on white screens. It is our goal to provide our customers with the very best environment for video projections.

In fact, Dark Space Media® is all about the creation of an optical-dead dark space, as if you would float in the cosmos with no ambient light whatsoever. Although this might sound strange, the outcome is real and tangible.

The problem with projection screens is that they must reflect all colors equally, regardless of the wavelength. Although perfectly reflecting all colors, using a mirror as a reflection media is not an option since the projection screen also must reflect the light in a perfect diffuse manner (i.e. in all directions equally). As a result, only white projection screens can be used ... and that causes a problem ....

Just imagine the following question: "How to project a black spot (e.g. a black ball) on a white screen"? In order to answer this question it is important to fully understand it.

Projecting a fully black screen on a white background is no problem at-all, you just project nothing ... -that is- ... provided there is no illumination whatsoever in the room. The latter is paramount since the slightest amount of ambient light in the room makes the projection screen visible, and thus no longer perfectly black, since it is ... white.

Projecting partially black images is an even bigger challenge since light from projected images generates ambient light making the "black" image visible, and thus no longer "black"!

So, the solution to the problem relies in the elimination of all reflected light coming from the ceiling, the walls, the floor, but also the seats, especially leather seats! Although they are more exclusive, they perform very poor in cinematographic environments. Leather seats are cold and sweaty, they distort the surround effect, and they generate reflections hindering "deep" black projections. That is why we selected professional cloth-based cinema seats (e.g. Kinepolis seats).

Van Welleman Villas® also fully integrated the Dark Space Media® environment with the 1-2-3 Simplicity Control® home automation (light, alarm, fire & smoke, air-conditioning, etc.) so that -for instance- the security lights automatically illuminate upon potential unsafe situations and thus turning the ideal projection environment also into a perfectly safe leisure environment.

Traditional Projection Environment
Traditional cinemas use cloth-based materials for floors, walls and ceilings. Although optimized for acoustic performance, they perform poor for optical performance.

Dark Space Media® cinema
Example of the impact of light-ray caption and absorption on the projection environment (simulation).
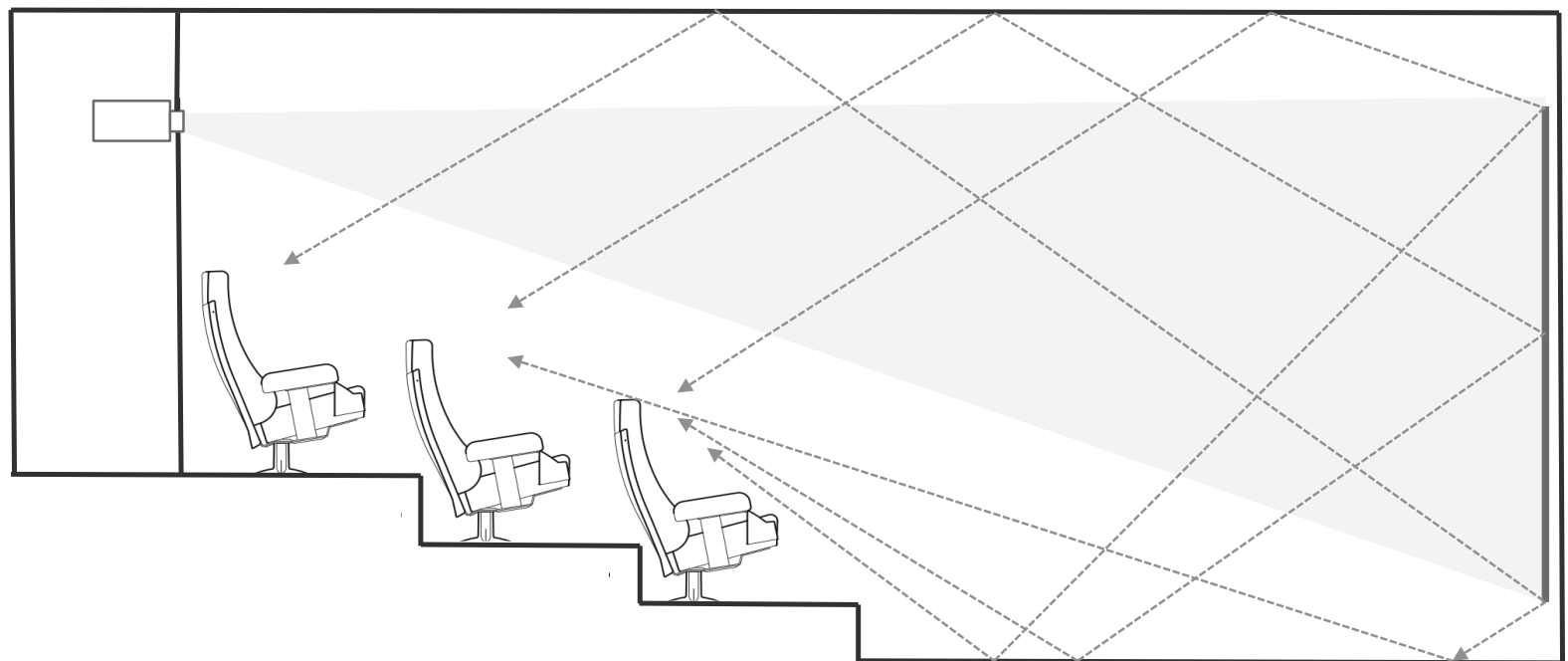
DARK SPACE MEDIA®

fig 1. Traditional cinematographic environment.
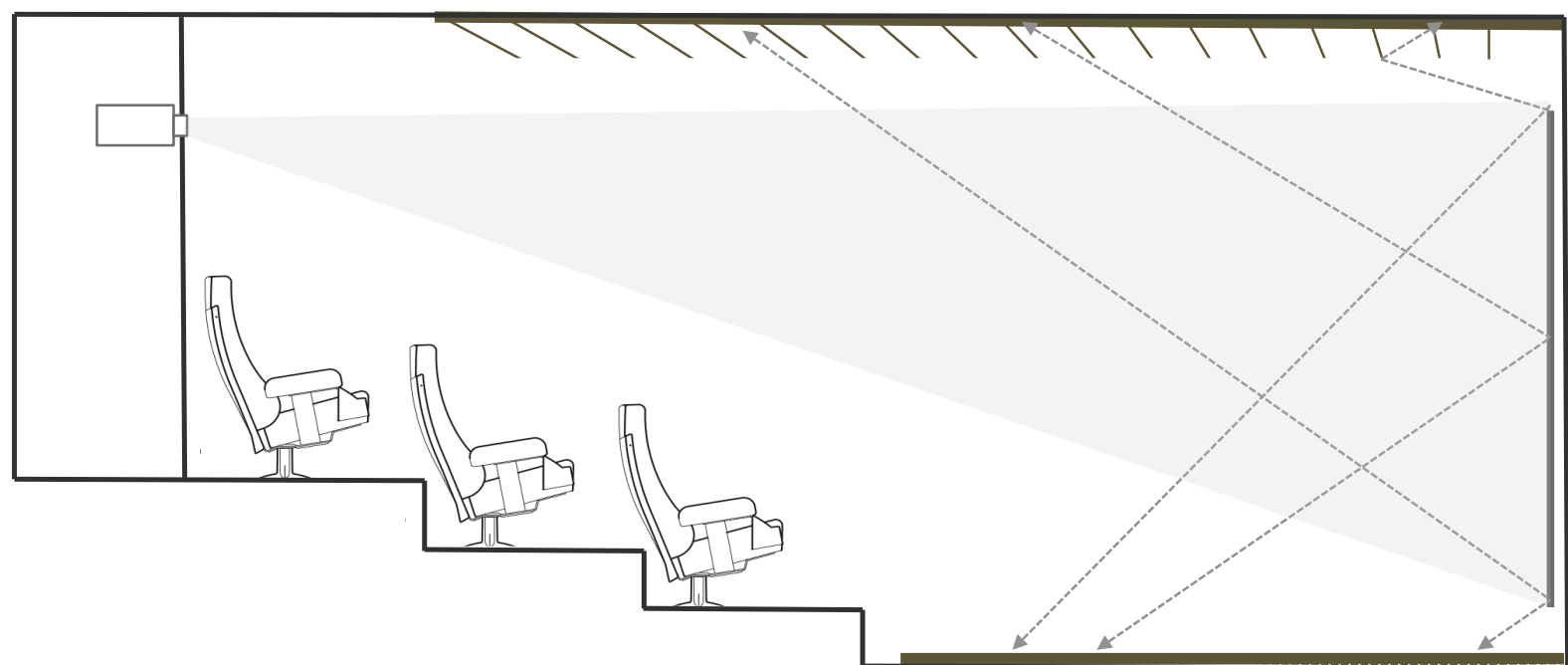(example with traditional cloth-covered ceiling & carpet floor)

fig 2. Cinema with Dark Space Media® technologies
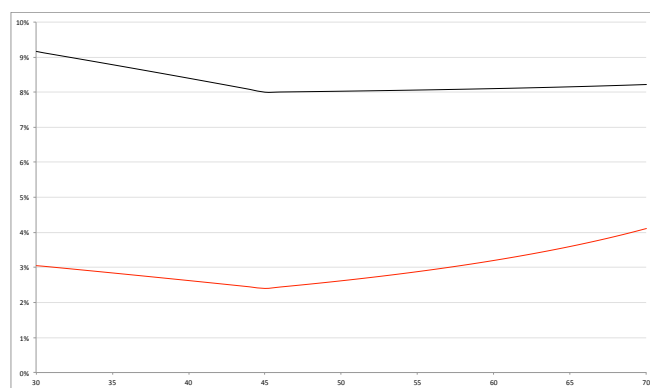(example with light-ray caption & absorption)

fig 3. Reflection of a black carpet (black line) versus Dark Space Media® (red line)
(Vert. axis: reflection with white wall as reference / Horiz. axis: reflection angle)