

The following presentation was given by Chris Ward, President of Lightspeed Design, Inc. / DepthQ® 3D

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2015 Seminar Series: The Future Of The Cinema Experience

The future of the cinema experience.

A Blue Sky / Blue Ocean Idea...

A Shared Augmented Cinema Experience

Chris Ward, Lightspeed Design, Inc. / DepthQ 3D

This coming November will be my 23rd year working in 3D.

Based on that experience, I would like to take a few minutes to speculate on the future of 3D Cinema technology.

As a collective, 3D cinema brands like DepthQ, RealD, MasterImage, XPAND, and others have reached a technical plateau in Cinema.

I think the recent 3D box office numbers from movies like **Jurassic World**, **Mad Max**, and **San Andreas** show we have established our place in the industry.

So, what is out there as the *next* wave... The **Blue Ocean idea** that will leap cinema to a new level?

We think it might be the development of

[A Shared Augmented Cinema Experience.](#)

Virtual Reality / Augmented Reality



At this very moment in Silicon Valley there is the beginnings of a major and well-funded movement to take the 3D technology formats of Virtual Reality (VR) and Augmented Reality (AR) mainstream.

- **Facebook** invested 400 million in cash and another 1.6 billion in stock in a start up, called *Oculus VR*.

- **Microsoft** is developing an AR technology called *HoloLens*.

- **Google** led a \$542 million investment in the AR company *Magic Leap*.

While the product pictured appears awkward and its future is uncertain...

The last time a 3D technology company received this level of industry and financial support it was RealD.

Virtual Reality / Augmented Reality



Virtual Reality: An immersive visualization that replaces reality with artificial realities, often within a 360 degree 3D environment, which can be explored and interacted with by the viewer.

Augmented Reality: A technology that superimposes a computer-generated image on a user's view of the real world, thus providing a composite view.

First, let me define some terms.

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The technologies employed create the feeling of immersion.

- Wide field of view, 90 -110+ degrees
- High frame rates (HFR) of 60 fps+,
- Extremely high-quality Crosstalk-free stereoscopic 3D. Close “reach out and touch” 3D

Then a second layer is added which allow viewers to control and alter the visualization.

- Full head-tracked 360 degree look around, POV
- Responsive low latency interactivity via the tracking of input devices

OR

Tracking of just your eyes and hands, no devices... The eye tracking is the most intriguing development, they can tell **where and at what you are looking.**

Virtual Reality / Augmented Reality



Presence– the perception or instinctual feeling of actually being inside a simulated world.

Agency– the capacity to act independently and to make your own free choices.

VR builds on traditional 3D techniques currently used in cinema, but then by design deviates substantially creating two new experiences.

Presence– the perception or instinctual feeling of actually being inside a simulated world.

Agency– the capacity to act independently and to make your own free choices, almost unconsciously

Virtual Reality / Augmented Reality



Blown Away



Isolating

The result of triggering the perception of **Presence and Agency** in viewers is very powerful.

Consumers will be blown away; however, the typical implementation is also isolating.

These characteristics are very appealing to home theater companies.

It will not surprise you that the largest US cable company, Comcast, is supplying Venture Capital.

If the technology develops successfully, it may not be good for Cinema Exhibition.

Virtual Reality / Augmented Reality



Blown Away



Isolating

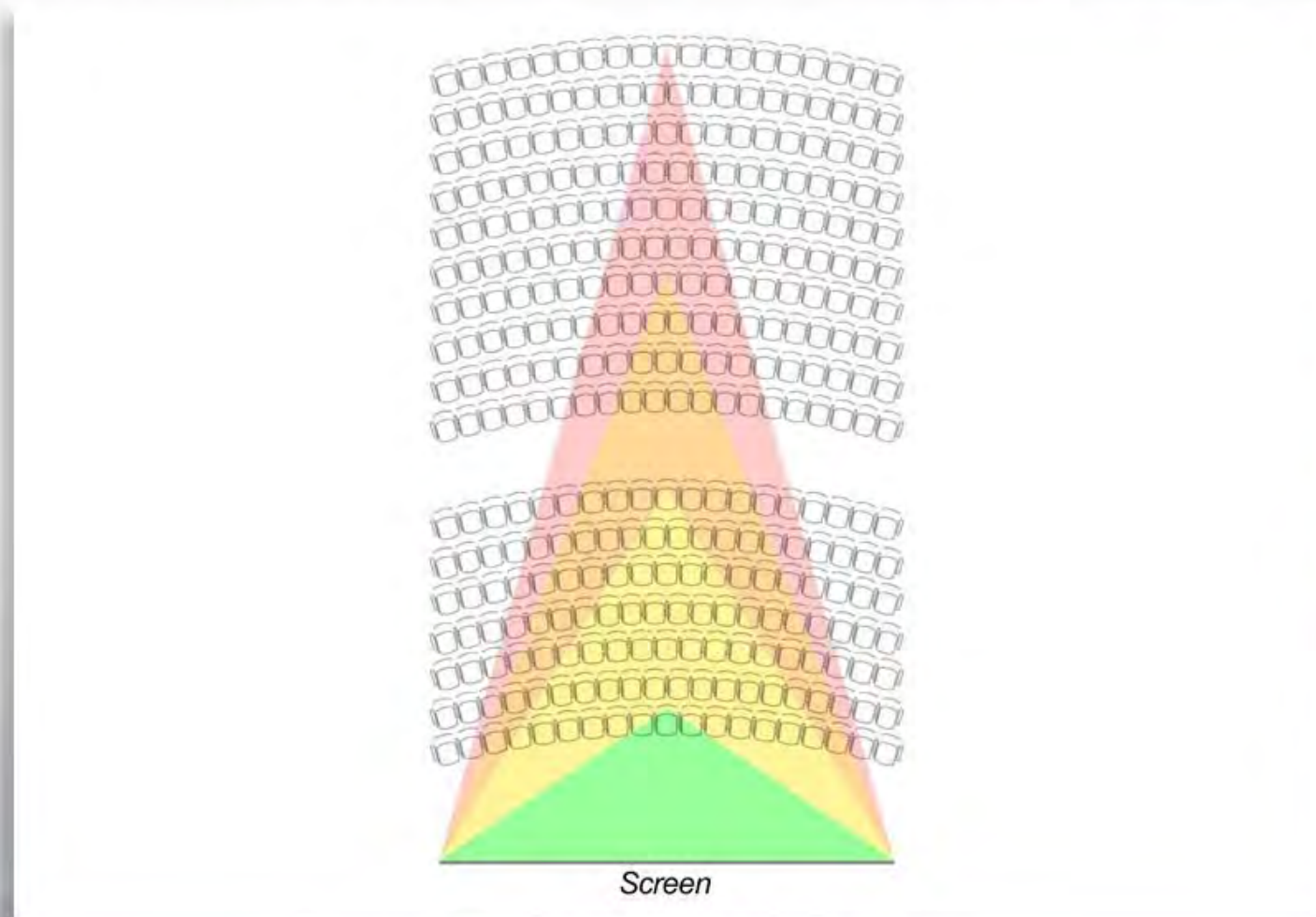
But the **good news** is, that people like to get together, for common shared experiences.

Perhaps we can adapt aspects of the trend over the long term and **enhance** the Cinema Experience...

Make movie going more social.

VR/AR represents both a **challenge and an opportunity** for cinema exhibition.

Stereo 3D FOV Today = A Window We Look Through



FOVs

- 30°
- 40°
- 60°
- 110°

This is the 3D Field of View of a typical Cinema today.

Only the first few rows are even close to being immersive, most viewers “look through a window”.

As pictured:

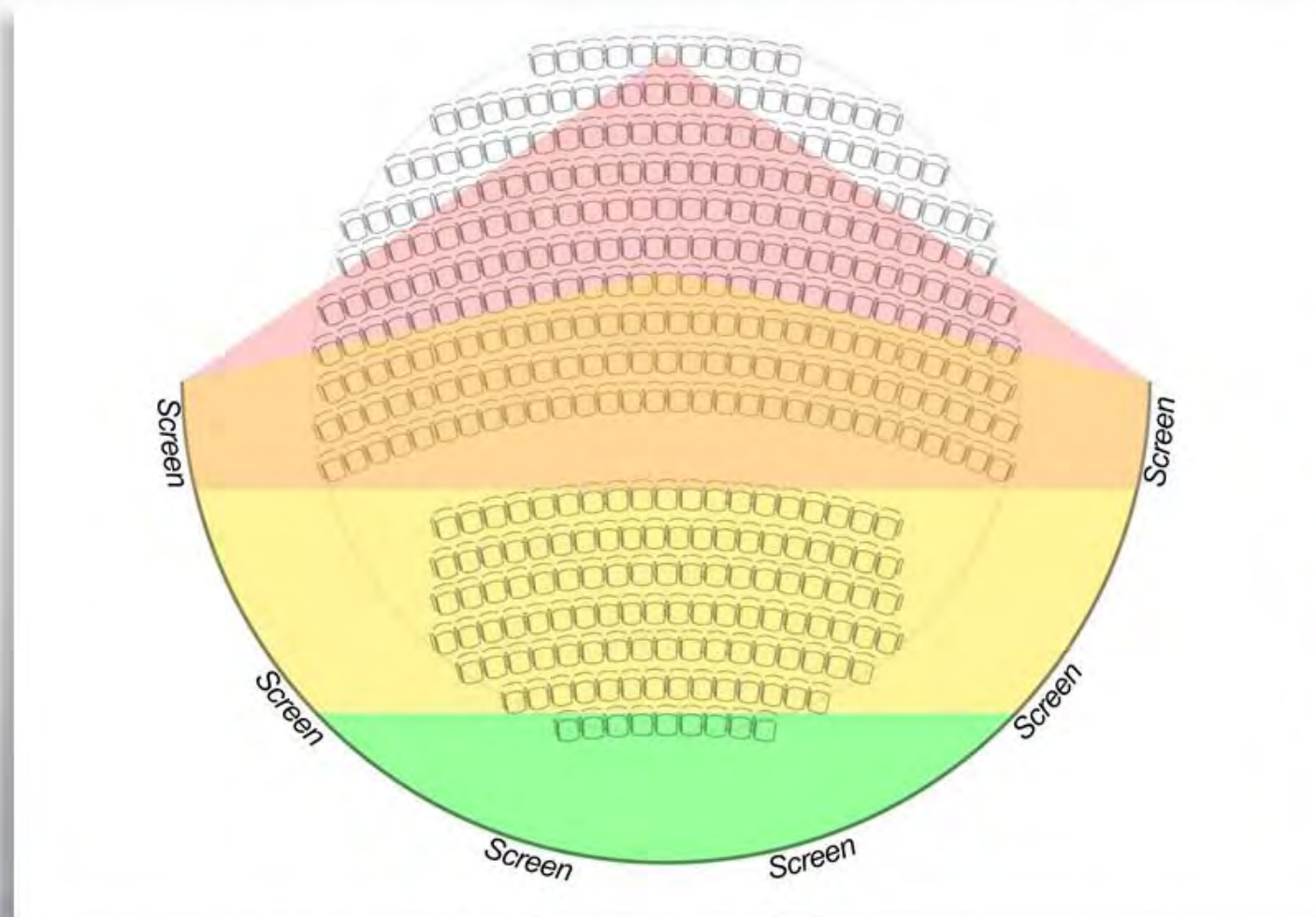
- Green is 110 degrees FOV
- Yellow 60 degrees
- Amber 40 degrees
- Pink 30 degrees

Comparatively most VR devices will have 110 degrees FOV + POV Freedom (Look-around).

The current field of view limits 3D cinema's effectiveness.

3D Field of View (FOV) Today

Stereo 3D FOV to Match VR/AR = Being There (Presence)



FOVs

110°

160°

180°+

180°+

3D Field of View (FOV), highly immersive

What we need:

At minimum, **Comparable FOV + some POV freedom** (Look-around) to create the sensation of **Presence**.

In a layout like this, **even the back row** can be considered immersive.

As pictured:

Green and Yellow are 180+ degrees FOV

Amber 160 degrees

Pink 110 degrees

But we as cinema people need to **think even further forward than just Presence...**

Virtual Reality / Augmented Reality



VR Today



VR/AR Goal: 5-10 Years

What if... in 5- 10 years the broad market investments being made can transform the bulky VR headset into the light glasses shown to the right.

Perhaps even a pair of **Augmented Reality Glasses** can be made like this...

and

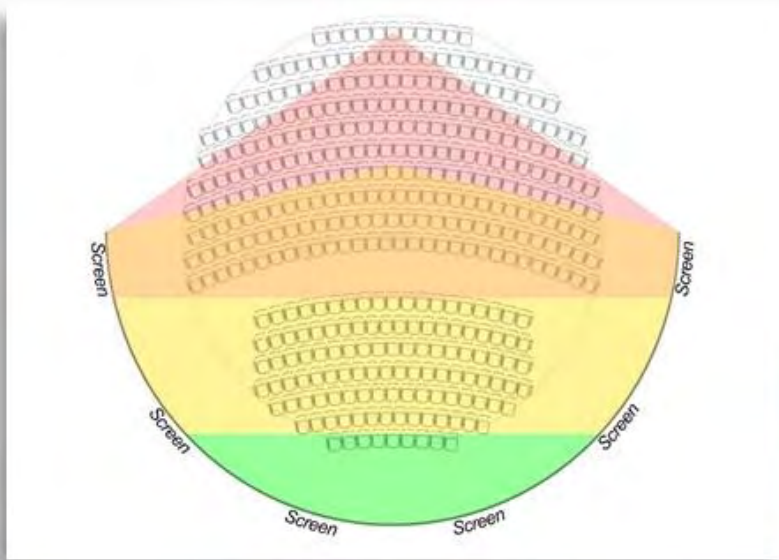
- Include **personal imagery**, via a tiny laser projector that shines light onto a transparent lens, which deflects the light onto the retina.

- Include both eye tracking and hand tracking, for viewer control and input

All of these technologies are in R&D now.

In fact in my home city of Seattle, they have been the subject of University research for many years.

Virtual Reality / Augmented Reality



Augmented Cinema, Goal: 5-10 Years

Assuming such glasses...

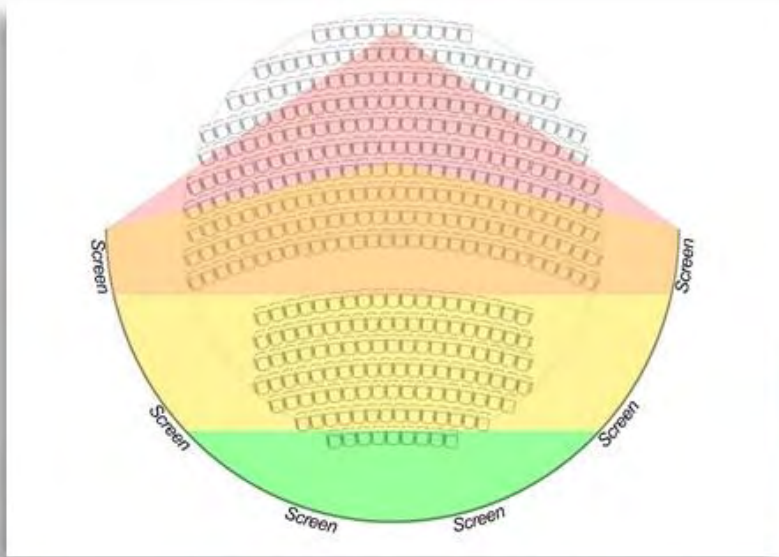
We could present a film to the mass audience via a central projector as we have done for centuries, this is the audience's "reality",

BUT then via the AR glasses we could personalize the film experience with added images and even allow the audience to control the film as a collective.

We can create a better shared experience,

Augmented Cinema.

Virtual Reality / Augmented Reality

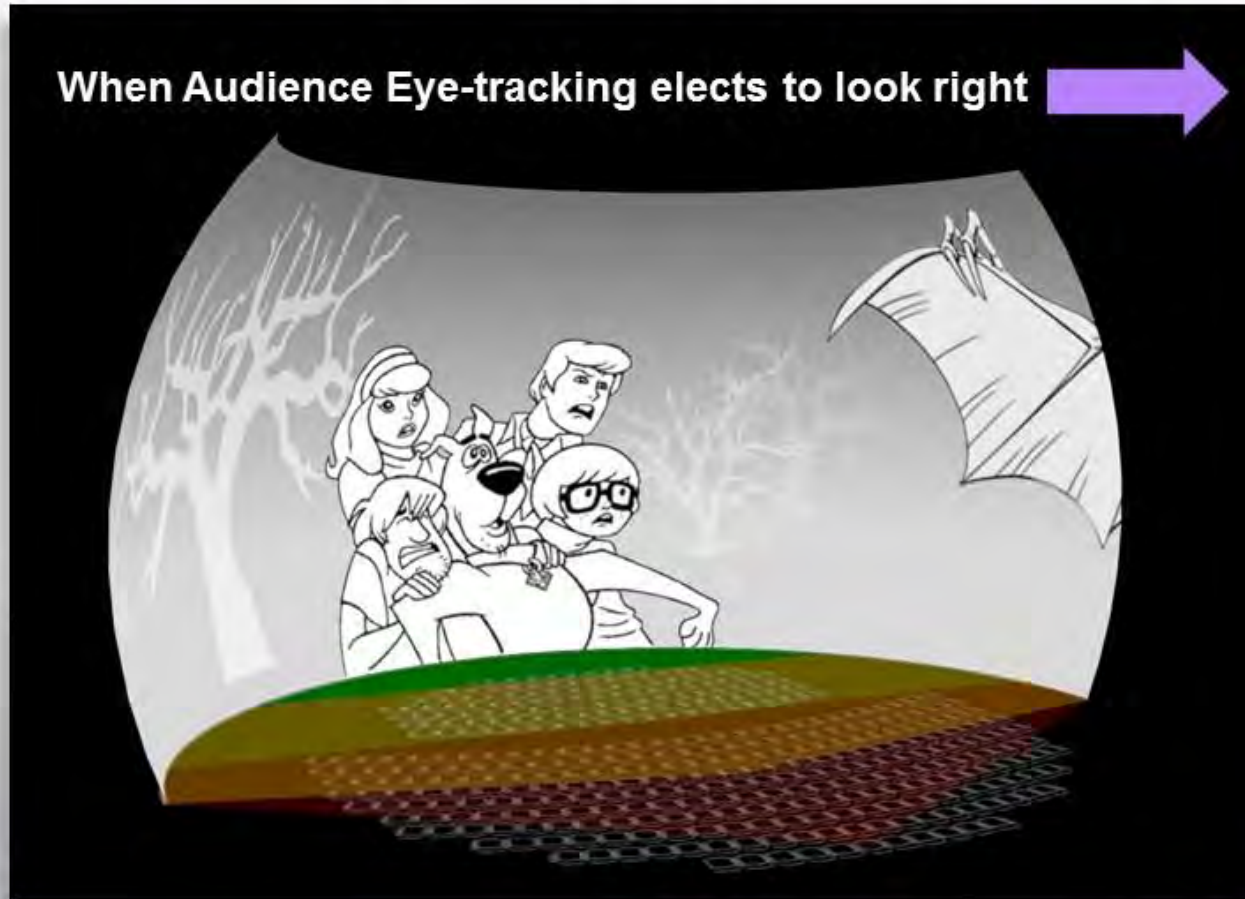


Augmented Cinema, Goal: 5-10 Years

- Provide physical, social interaction
- Thumbs up/thumbs down polling could even provide, **alternate** visuals in a scene designed for it
- Personal elements **shared** between a couple or a group of friends.
- Point out **Easter Eggs**, as done in **gaming**, which then animate and surprise.

The ideas are endless, and would require a substantial rethinking of the film making process.

Augmented Cinema = Presence + Agency



Many Augmentation Possibilities:

- Personalized Imagery
- Imagery, Shared only with Friends
- even Audience Polling, to effect the film.

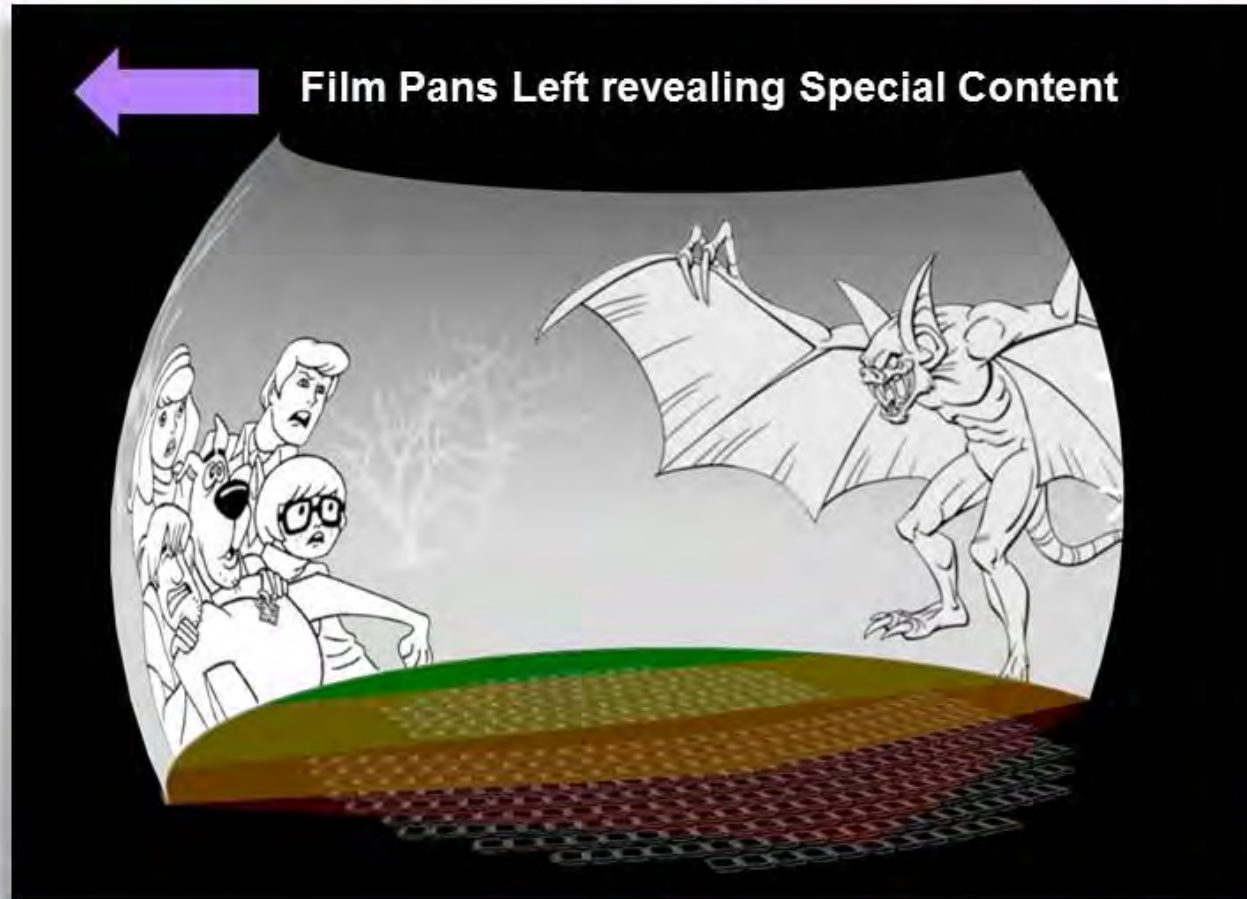
Here is a simple example of **Augmented Cinema**.

Stereoscopically rendered 3D objects, characters and “holograms” of objects seamlessly overlaid, via the glasses, onto the film on a per-viewer basis.

Via the eye-tracking the whole audience is polled **and elects** to change the course of the centrally projected film, steering the actual POV of the currently displayed 180 degree view.

In the pictured example, **When the Audience Eye-tracking elects to look right...**

Augmented Cinema = Presence + Agency



The entire film, which is actually 360 degree, Pans Left revealing Special Content.

Many Augmentation Possibilities:

- **Personalized Imagery**
- **Imagery, Shared only with Friends**
- **even Audience Polling, to effect the film.**

The future of the cinema experience.



Eyes Wide Open...

I know these ideas are speculative.

Like most of you first thing I think is... the glasses will break, the screen is too big, the servers and the projectors need to change.....

there is no place for this idea in high volume cinema.

As a company, with 1800 3D cinema screens running daily, I am as pragmatic as you.

BUT, also as an industry we need to keep our **Eyes Wide Open** to the possibilities - as the worlds' technology and even its *concept of entertainment* is shifting fast.

Thank you.