

3D Content, Screens Building, 3D TV Slow to Catch On

Companies: DLB, RLD, SEO:034220/LPL, SNE, TSE:IMX/IMAX, TYO:6502/ETR:TSE1, TYO:6758/SNE **February 24, 2011**

Research Question:

What is the future of 3D content viewing, and how will that affect box-office receipts and TV sales?

Summary of Findings

- 3D content viewing continues to grow. Production and conversion are starting to include genres outside of animation and live action.
- 3D movies' financial success has been restricted by a lack of screens, especially in Europe and Asia.
- Most moviegoers are willing to pay the 3D premium, but industry professionals expect pricing to level out within the next few years.
- 3D TV adoption is being stymied by the sets' high prices, 3D glasses, the different technologies, and the lack of content for TV.
- [Passive glasses](#) and [no glasses 3D TV](#) have limited availability. Once these technologies are more widely deployed, 3D TVs should see an increase in adoption.
- Consumers are waiting for the next generation, increased content and lower pricing of 3D TVs.
- Sources are closely watching for tablets/smartphones to drive 3D viewership. The "YouTube generation" is more open to 3D TV.

	3D Content	3D Theater Revenues	3D TV Sales
Content Providers	↑	↑	↓
Conversion Providers	↑	↑	↓
3D Tech Pros	↑	↑	↓
TV Manufacturer	↑	↑	↑
Theater Co. Executive	↑	→	N/A
Experts	↑	↑	→
Store Associates	↑	N/A	→
Store Customers	N/A	N/A	↓
3D Box Offices	↑	↑	N/A
3D Movie Patrons	→	→	N/A

Silo Summaries

1) CONTENT PROVIDERS

These two UK-based sources expect demand for 3D movies to continue to grow. Adoption of 3D TV is expected to be slow because of consumers' dislike of the glasses, the high cost of monitors and the lack of quality TV content.

2) CONVERSION PROVIDERS

All four sources reported growing interest and improving quality for 3D movies. One source said the "perfect storm" of creative interest, 3D technology advancements and the switch to digital movies is driving 3D adoption.

3) 3D TECH PROS

All four sources said demand for 3D content is growing. Adoption of 3D TV will happen but is being held up by the high cost of monitors and 3D glasses, and may be preceded by adoption of 3D gaming on PCs and small mobile devices.

4) TV MANUFACTURER

This source said more 3D content and lighter, less-expensive glasses will be the key to fueling sales of 3D sets.

5) THEATER CO. EXECUTIVE

This source said income from 3D theatrical releases has remained steady. The chain continues to expand the number of digital theaters it has available for 3D releases while focusing on live action, animation and horror genres.

6) EXPERTS

All three sources said the production and popularity of 3D movies were increasing, with animation and action being the most popular genres.

7) STORE ASSOCIATES

Three sources reported mixed 3D TV sales during the holidays and for the week leading up to the Super Bowl. Common customer complaints included headaches from viewing 3D content and 3D TVs' shadowy screens.

8) STORE CUSTOMERS

Both sources were looking at 3D TVs but were not convinced about 3D's benefits. One source had done extensive research and plans to wait to purchase his 3D TV until prices drop significantly and the technology improves.

3D Content, Movies and TVs

Background

Our previous research determined that demand for 3D movies was growing but that some patron backlash had occurred because of tickets' high price and poorly converted and produced 3D movies. [RealD Inc.](#) (RLD) emerged as the U.S. market leader for providing the technology required by theaters to project a 3D movie.

Sales of 3D TVs have been tepid. Samsung Electronics Co. Ltd. (SEO:005935) and Sony Corp. (TYO:6758/SNE) reported weak demand for 3D TVs while HHGregg Inc. (HGG) lowered its [outlook](#) for the current quarter, partly because of slow demand for high-cost TVs. TV manufacturers expect 3D TV prices to [fall](#) in 2011, echoed by Best Buy Co. Inc. (BBY) whose 3D TV prices dropped dramatically. Currently, 3D TVs start at \$1,500 to \$2,000, and very few channels offer 3D content. Only 2% of U.S. consumers currently own a 3D set.

CURRENT RESEARCH

To assess whether 3D TVs and movies can have a successful near-term future, Blueshift employed its pattern mining approach to establish and interview sources in 11 independent silos:

- 1) 3D content providers (2)
- 2) 3D delivery/3D conversion providers (4)
- 3) 3D technology professionals (4)
- 4) TV manufacturer (1)
- 5) Theater company executive (1)
- 6) Industry experts (3)
- 7) Consumer electronics store associates (3)
- 8) 3D TV customers at consumer electronics stores (2)
- 9) 3D movie theater box offices (2)
- 10) 3D movie customers (3)
- 11) Secondary sources (4)

Blueshift interviewed 25 primary sources, and included four of the most relevant secondary sources focused on the adoption of 3D TV and new movies for 3D screens.

Silos

1) 3D CONTENT PROVIDERS

These two UK-based sources expect demand for 3D movies to continue to grow. The number of 3D movie screens is not keeping pace with demand in Europe and Asia, and is limiting revenue potential when popular content is released simultaneously. Adoption of 3D TV is expected to be slow because of consumers' dislike of the glasses, the high cost of monitors and glasses, and the lack of quality TV content. 3D content for mobile devices was discussed as a growing segment that will contribute to the adoption of the technology.

➤ [Alexander Lentjes](#), producer of 3D content

This source said the European and Asian markets still are dealing with a shortage of 3D screens, a crowded 3D release schedule, and an increasingly discriminating viewing public in terms of 3D quality. The lack of any prospects for glasses-free 3D TVs combined with a shortage of 3D TV channels will slow any 3D TV adoption.

- "We're seeing an increase in demand for 3D content. Even streaming content, we're seeing greater demand. But in Europe we're seeing standards being elevated for content, and that is causing less content to get through. The French broadcasters won't broadcast 3D because they haven't seen good enough quality."
- "The theaters do want to see more 3D releases. There is a certain bottleneck. There are too many releases at the same time. They aren't spread over the year, and it's major blockbuster stuff. European producers can't get their content into cinema when blockbusters are being played. The European producers want more openings."

3D Content, Movies and TVs

We're seeing too many releases and then quiet windows. What happens as well is that you get lots of Hollywood releases that use cheap conversion processes. There's a big complaint among 3D producers that Hollywood is trying to push out cheap crap."

- "The audience is fairly sensitive to this issue of release quality. You get antsy reviewers saying it wasn't worth the extra money and the conversion wasn't that good. Subsequently, audience numbers go down quickly after opening weekend. Of course, early adopters pushed attendance. 3D is at the point where it's not adding that much more revenue for studios. It becomes easier to release 2D films. We may see a move toward 2D as a more interesting release. The studios do want 3D releases, but there are only so many release spots. We still have a relatively low number of 3D screens available in Europe. There are much more in the U.S. You look at Asia and Russia and you see very low numbers of 3D releases. 2D is still more interesting there. You still have a lot of theaters that run 35mm film projection."
- "For animation, 3D is stable from this point on. Every animation release will be 3D, and the audience is happy. For live action, it will grow a little. For normal romantic comedies, they won't want to pay for it. It becomes an animation and spectacle orientation medium. [Martin] Scorsese produces the highest of quality of films. Because he is such a big name and the quality is good, there'll be an audience for his 3D movie. ... Whether 3D can hit new genres depends completely whether a studio pushes for 3D. [Michael Bay](#) was against 3D for *Transformers 3*, but now he is saying he's willing to do it. The audience knows quality 3D is possible. ... Until a director shoots a beautiful romantic comedy in 3D, audiences won't see the value in paying extra. If it doesn't add quality, the audience doesn't want to pay. We'll have more 3D releases this time next year if only because animation is going all 3D. We'll see some 3D documentaries and then some fantasy and sci-fi. The other genres are very unlikely to be 3D."
- "The people who have purchased 3D TVs have been invested in premium packages to view 3D content, but it's very early days. We can't tell if they're happy. They're only seeing one new product every month in terms of a new movie. I can't imagine that consumers at the moment will be very happy with the low throughput of new material, whether they'll be recommending it to friends. You want a 3D premium package."
- "There are huge optical issues with viewing angles and view zones for non-glasses 3D TVs. You can't rotate your head or sit too close to each other. People are not impressed or happy enough with it. What I'm seeing is that people are saying they won't buy a 3D TV until they're better glasses-free TVs, but that won't happen. There are just physical limitations for those screens. All manufacturers of TVs are putting 3D chips in their TVs. The question is whether people will purchase extra 3D packages and subscribe to premium packages. The bigger question becomes if every TV is a 3D TV, who is going to pay for the extra cost of producing 3D content? There isn't suddenly more money for programming. There's less. The content quality will have to go down. There's a discrepancy between what viewers want to see and what broadcasters can produce."
- "We're seeing more 3D content production for TV, but there are few outlets. But the content is sitting on shelves unless you have an agreement with the very few channels that will air in 3D. Producers see that. Why spend money on 3D if there are no agreements in place with broadcasters? You'll see an increase, but it's based around people hoping to find a 3D channel for the content. It's a bit of madness because it'll just sit on the shelf. There are only about four 3D channels in all of Europe. Producers after a year of frenzy are taking the view that we used to need to be future proof and produce in 3D. Now it's let's wait and see if subscription goes up and if a public broadcaster jumps in. Without that, it's a tough case."
- "We're busy doing 3D work. And we're busy doing work for [Nintendo \[Co. Ltd.'s\] 3DS](#)."
- "I've had a prototype of the 3DS. It's great. You're locking your audience in a very specific position, and you can tailor your 3D perfectly to it. The fact that you don't need the glasses will speak to a lot of people. I'm impressed by it. We were looking at sports on it. There was a game demo that we walked through. There were some movie trailers for Warner Bros. [Time Warner Inc./TWX] movies. I hope it has opportunities for movies, but it's a closed system. Unlike the LG Optimus 3D that works on [Google Inc.'s/GOOG] Android, you won't be able to communicate with the device to get stuff on and off. I don't know how big it will be beyond what Nintendo wants you to do with it. Nintendo advises users to take a 30-minute break between playing, and it's not recommended

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Producer of 3D Content

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Producer of 3D Content

3D Content, Movies and TVs

for kids under six. The producers of [Wallace and Gromit](#), the leading stop-motion animation studio, are building a series of animation shorts, specifically tailored for the 3DS. There'll be a small market for short form. There may be a place where you can upload shorts and Nintendo can make some available. That content would be distributed wirelessly. Nintendo has a new idea that if there are other 3DS devices around, the different units can communicate. The device is Bluetooth-capable. And if there's a Wi-Fi spot and Nintendo has a deal with big telecom providers, it'll be automatically uploading and downloading what is needed.

- “[Microsoft Corp.’s/MSFT] [Xbox Live](#) is interesting because you can now view movies and soon you can stream 3D. You wouldn't be limited to cable and satellite providers. It's an opportunity for content producers. The 3DS uses flash cards, but there's a big emphasis on wireless. It will be possible to download games on that. They're still working out some of these details. Any device that locks a viewer of content into one place is great for 3D. In the future, all handheld devices will have 3D capability and the ability to upload/download content. That will help 3D.”
- “The new LG tablet, you can rotate the screen and it remains 3D, which is interesting. It's bigger than the 3DS and it's bigger overall. I'd prefer that as a 3D handheld device.”
- “Apple [Inc./AAPL] is filing a number of patents for doing different ways of doing 3D that is better than what Sharp [Corp./TYO:6753] has done. They're looking at ways of doing it in a way that multiple people can see the screen without glasses. I don't know if it's going to work. They have some interesting patents. One of the cleverest applications of late is the eye-tracking application. With precise eye tracking you can fake 3D. That may be the next 3D revolution. That'll only work with a video game. The next iPad will have a 3D screen you can turn off or on. They've been filing patents for 3D iOS as well.”

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Producer of 3D Content

► Executive producer with experience in creating 3D content for TV and mobile devices

This source said demand for 3D TV content is high in Europe, but he also is getting requests to produce 3D material from mobile device manufacturers wanting to show off their new 3D-capable displays. Sales of 3D TVs are being held back by the need for 3D glasses and the scarcity of producers skilled at creating 3D content. The path to profitability in 3D TV remains uncertain for content producers.

- “3D movies will become more commonplace. People aren't going to get as excited about it, but it will be expected for big movies. All the big directors are embracing it. We're going to watch 3D movies whether we want to or not when the big movies come out.”
- “The number of 3D screens in the world right now and for the foreseeable future is going to be a really small fraction of screens. Nobody knows yet where that business model is where everybody knows how to make money off of 3D.”
- “There was a little bit of an overreaction to some of the bad 3D movies, like *Clash of the Titans* and a few others. There was some hand-wringing that it might hurt everybody. But quality rises to the top. As there are more experienced people producing 3D, the costs will come down and those bad conversions won't happen as much. Most if not all of the 3D experiences in the theatre will be good for consumers.”
- “There's going to be a premium [for 3D movie tickets] for a good while, for at least the next few years. It may get squeezed a little, but I think there will be a premium for quite a while.”
- “Content and glasses—those are the two biggest issues [for 3D TV]. It's not really the cost [of the TVs]. The issue with content is there are very few people who know how to produce 3D content properly. And the content providers, the big media companies, they don't see a clear business model yet for profit, so they're very slow and hesitant to ramp up and invest in content.”
- “The 3D TVs [available now] are good, and now that companies like [LG Display Co. Ltd./SEO:034220/LPL](#) and [Vizio \[Incl\]](#) are coming out with polarized screens where you can use the inexpensive glasses—the RealD glasses like you get at the movies—I think that's going to help a lot.”
- “The most commercial demand that's generating revenue right now is actually from 3D TV in Europe. We've sold more in Europe mainly because there are more outlets per country.”

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Executive Producer

3D Content, Movies and TVs

- “We have sold some 3D mobile content to support the launch of things like the [LG 3D phone](#) and other 3D technology that’s actually being shown off right now at the [Mobile World Congress](#). But there’s no market yet that I’ve seen so far for anyone licensing or buying [3D content] for mobile.”
- “There will be more 3D mobile screens than 3D TVs in the short term, the next six to 12 months—the mobile screens you can view without [3D] glasses. So between the phones like the LG Optimus and gaming devices like the [Nintendo] 3DS, there are going to be a lot of those little handheld devices thrown out in the market.”
- “You have two eyes, so you have to shoot [3D material] with two cameras. Having those two cameras at the right distance apart and the right angle for every shot takes a lot of experience. There are a lot of people out there who are just learning how to produce 3D. A small mistake in 3D can hurt your eyes. A small mistake in 2D might leave something a little out of focus, but that’s not necessarily a big deal.”

2) 3D CONVERSION AND 3D DELIVERY PROVIDERS

All four sources reported growing interest and improving quality for 3D movies. One source said the “perfect storm” of creative interest, 3D technology advancements and the switch to digital movies is driving 3D adoption. Adoption of 3D TV is being impaired by the cost and the glasses. All three 3D conversion sources said their companies are at capacity.

➤ Head of a leading production house that handles 3D conversion and creates 3D content

This source said the number of 3D theatrical releases continue to grow. He views glasses and a dearth of content as barriers to 3D TV adoption. He is closely monitoring the potential for glasses-free [autostereoscopic](#) 3D TV as the Nintendo 3DS will be in stores March 27.

- “We’re seeing some acceleration in 3D work. It’s been steadily increasing. Bottom line is that 3D is still generating money so it’s not going away.”
- “We’re not busier than last year. Ever since *Avatar*, there’s been steady business. The challenge right now for 3D is to make it good and cheap enough for the television market. Everyone is calling us, trying to get help for TV distribution. We’re at full capacity doing feature films. It’s labor-intensive and expensive.
- “Studios can rerelease a *Star Wars* or something of that magnitude and recoup investment on the conversion. I think right now if studios weren’t going to do a theatrical release for the movie, it is not going to do a 3D conversion.”
- “Horror films and kids’ movies have been there. We’ll move toward live action movies. ... Content can widen.”
- “One of the trends right now is that studios are trying to distinguish live action 3D that was captured in 3D versus a conversion, but both are fake. If they’re done correctly they’re indistinguishable. The shooting has to be good, and the conversion has to be good.”
- “IMAX [Corp./TSE:IMX/IMAX] could carry RealD. RealD is a glasses supplier for the theater. They’re what makes the theater able to go from 2D to 3D. Ninety percent is RealD, which is passive glasses versus active glasses, which are \$50-plus. With the passive glasses system, they use a silver screen. The other system uses an existing white screen. A silver screen is cost-prohibitive upfront but then glasses are cheap.”
- “Television is a trickle-down because the price point is so high. All of the cable content providers are dying for 3D content. It’s just not there. DirecTV [DTV] has a channel, but it’s not great. If they have a 100 hours, they’d be stoked. Shooting 3D TV is expensive. It’s always going to be a little bit more to shoot 3D because you need equipment to keep it in sync and more cameras. You have more. Can they do it for less? Sure.”
- “At this point it’s tough for TV, but once it gets automated and easy to convert, it will explode. You’ll always hear that 3D TV is slow to grow, but it’s much faster than HD. TV is saturation in HD, and now Samsung and others have to sell something new. They can sell Blu-ray and 3D. The upcharge is minimal, and content is fickle. Personally, I don’t want to sit at home and watch 3D TV. A movie theater is a dark room and your engaged. A TV at home is passive. You’re on your laptop and cooking dinner.”
- “At [CES](#) there was a lot of buzz about what new 3D TVs are coming out. There are manufacturers trying to crack autostereoscopic. Whether its five years or 10 years, it’s being worked on. There’s also no standard. I have a

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Head of a Leading Production House

3D Content, Movies and TVs

Sony and you have a Samsung and it looks different on each. Once there's a standard, as a content provider I don't have to worry about it looking [bad] on different TVs. 3D is super subjective, and it looks different to different people. It's definitely going to take a while for 3D TV to take hold. Content is king and when that quality 3D content comes it'll happen. I own two TVs and neither are 3D."

- "Premium VOD [video on demand] could cause some spurring of the 3D TVs. The glasses are very expensive. It's prohibitive to get seven pairs of glasses. Hyundai is the only one doing passive. Sony, JVC [Kenwood Holdings Inc.], Samsung are all active glasses because they don't want to upcharge the set. The viewer pays for the experience. I think the 3D tablets are cool. You're a single viewer and you don't need glasses. Who is watching movies on a tablet? That's a specific person. It's not a multiviewer thing."
- "The autostereo is what we're watching. Nintendo 3DS and handheld PDA providers are something we watch. We're going to do *Spiderman* and *Superman* in 3D. They have to do it in 3D. The problem is they don't go out with 3D in mind. Therefore, it yields lower results. I've read it over and over that for opening weekends for tent poles, 3D is doing more than 2D in revenue. Per-ticket user, there are more viewers in 3D. Studios are jazzed about the extra \$3 a ticket. At \$3 a ticket, how much do I have to make back plus some?"

► CEO for one of Hollywood's top 2D-to-3D conversion specialists

This source said 3D movies' future lies with consumer electronics makers getting more 3D TVs into homes. That will open up the market for 3D Blu-ray discs and offer more profitability to studios to invest in making 3D movies. Consumer interest will continue to grow in 3D movies, which will become standard once special glasses are no longer needed.

- "Consumer interest in 3D will continue to grow. At the end of the day, throughout the history of motion pictures, everyone has been trying to achieve something as close to reality as possible. 3D is the next step in that experience."
- "Audiences are finally developing a 3D vocabulary. Now they're held to a much higher standard."
- "For younger audiences, there will be a day when they see something in 2D and say, 'That's weird.' Really, all we're waiting on is the consumer electronics appliances and the theatrical presentations to lose glasses. Once that happens, there's no reason not to have something in 3D."
- "When you run a P&L for a 3D film, I'm sure the P&L is relatively modest and capped when it comes to the home market. But once the home market becomes flush [with 3D displays] and studios can garner the premium prices for a 3D Blu-ray and you're guaranteed high volume sales, that's going to help drive the feature film business, much like it did the direct-to-video film-making business."
- "We're already seeing advances. Vizio has just come out with their [first passive glasses](#). The biggest problem on the consumer electronics side is those glasses are \$200 a pop, so the guys coming over to watch a football game is a crazy expensive thing. But now that they can buy extra glasses for \$2, I think we're going to see [sales increase]. Once somebody figures out a complete autostereo solution, then it will fall back onto the content creation side. For a normal stereo presentation, we have to deliver two views, but once you get into autostereo, you have to deliver 20 views of that single frame of film, at least."
- "Like any other new process, the creative spirit will always keep raising the bar. I do think the movies are getting much better from a quality standpoint. The hits are getting louder than the misses."
- "We have some pretty interesting titles coming out in 3D to watch, so I'm sure 3D will get its money back, and then some."
- "I haven't seen exponential growth [in demand for 3D production], but a lot of what we've experienced has been a saturation of understanding from the studios about what it takes to develop a quality experience for 3D. I think the days of 'Let's throw it in 3D' are done. We're being engaged before the script is finished, before they've shot one frame of film."
- "With exhibition [of 3D movies], it's still going to be a few years before we say, 'Bam, that's an awesome, super-bright experience.' But most of the [problems with 3D quality] are back at the creation of the content. The folks at RealD and Dolby [Laboratories Inc./DLB] ... and industry leader RealD continue to make strides in increasing the quality of the presentation."

► Director of business development for a firm that converts 2D movies into 3D

This source said demand from movie studios for 2D-to-3D conversion services is booming. A few poorly done conversion projects have not dampened enthusiasm for 3D, which will continue to grow because a combination of 3D technology, creative interest and the move to a digital format for films.

3D Content, Movies and TVs

- “Even if a movie is shot with native 3D camera rigs, anywhere from 10% to 50% of the movie is still converted, with few exceptions. The work [on new films] is keeping everyone busy, and that isn’t even the main domain of what we do. Once we start converting all of the legacy material that is out there, our business will triple. As far as the difference between this year and last year, one word: *Avatar*. It started a craze that we have been waiting around for and are now reaping the benefits from.”
- “The demand [for 3D conversion] is endless. Most companies that do this kind of work are all full to capacity, and many are jumping onboard to do the work with little or no experience. This is why you are seeing so much lousy work out there.”
- “*Clash of the Titans*, *The Last Airbender* and *Narnia* were bad conversions. The conversion industry as a whole took a licking when *Clash* came out. [Prime Focus \[Ltd./BOM:532748\]](#) and Warner Bros. are to thank for that debacle, but it has not changed a thing [in terms of consumer demand for 3D]. I am looking at almost 10 projects right now. And to be fair, the two companies that did the movies I mentioned are getting much better. Competency across the industry for conversion is getting better.”
- “I think the real sustaining factor this time around for 3D is three-fold. It’s the technology—one projector; the A-list creatives behind 3D; and the movement behind the studios and exhibitors to convert to digital. Never in any of the other tries to get 3D off the ground has there been this perfect storm.”
- “Creatives are now getting behind the new artistic expression and are beginning to use the technique as a story-telling tool, much like they use sound and lensing and color. This effort and the eventual broadcast and legacy films being brought into the format will sustain its lifeline.”
- “[Our conversion technology] is a patented process that includes software and other proprietary techniques that create an illusion of depth, shape and perspective by shifting pixels. There is no reprojection going on; therefore, we seem to get much more detail out of every 3D layout and can manipulate or change that layout according to the creative’s vision.”
- “I don’t know about the price. 3D is most definitely here to stay. Whether or not the pricing structure will change, I doubt it. Have you ever seen the studios lower prices?”

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*Director of business development
3D Movie Creation Firm*

➤ Vice president of a cable technology organization

This source said sports is a differentiating product for 3D TV. He still believes 3D TV is an early stage and slowed by the high cost of glasses, but he cited growing interest from cable operators in supporting the production of 3D content.

- “Everything I’ve seen is that 3D continues to grow in the theater. The challenge is that the number of screens is limited. When they release a blockbuster release in 3D and then two weeks later ticket sales dramatically decrease, it’s a problem. It continues to grow and it’s an investment by the theaters, so it takes time.”
- “I’ve been involved in 3D tech for 20 years. The 3D experience is a richer, more engaging experience that is more attentive. It’s not the casual or relaxed attention where you have the TV on in the other room and you’re looking over the counter. 3D is about being focused for a period of time. Not all programming lends itself to that. But some does [such as] blockbusters movies, sports events, nature programming. ... I don’t think it’ll get to the point where it’s casual.”
- “I can’t think of a weekly sitcom that’s been proposed for 3D. There have been some tests done. We’re seeing more of that as other programmers start to produce original content in 3D. They bought cameras to do the production.”
- “We’re still in an infancy in respect to the production skill levels. The growth has happened so fast that a lot of people now producing 3D are not experienced or trained. As this grows, we’ll see better production. Right now the quality is suffering a bit because what you do in 2D doesn’t translate well to the 3D world. ... There is a lot of

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VP of Cable Technology Organization

3D Content, Movies and TVs

programming being done for television, and the producers there don't have as much experience there as Hollywood."

- "There are nine or 10 different technologies for the display of 3D. I've seen most of them. They vary in quality. You spend more and you get more. Some of them, like RealD and Dolby, actually use a left-right sequential display. The picture flashes three times for left eye, three times for right eye. That creates a motion shutter effect. Other systems like IMAX display simultaneously, and that reduces the flicker effect. Some of the lower-end ones are using film projectors, which is a big savings. Maybe the quality isn't as good as digital. I think it covers the whole gamut. RealD is in the middle of that. It seems like RealD has a dominant market share here. There are different tradeoffs between all of them. With Dolby you don't have to pay for a screen upgrade. You can move the system from room to room at the multiplex. That's a convenience factor. Downside is the glasses are more expensive. There are pros and cons for theater owners. Financing is another issue in terms of the split with the tech provider. IMAX has a totally different screen size, so you have to physically redesign the size of the theater for a taller screen. They have opportunity in new buildings, but in a retrofit it's much harder."
- "We are seeing the cable operators interested in 3D. Cable began with 3D sports with the first sports transmission last march with a New York Rangers game. Then we had the Masters in April and then in June with the World Cup and all through the summer with sports."
- "In the past month, [3net](#) [a 3D joint venture between Sony, Discovery Communications Inc./DISCA, and IMAX] and [The Walt Disney Co.'s/DIS and The Hearst Corp.'s] [ESPN3D](#) announced they'll go 24/7 with 3D. It's not an easy thing to grow because the production is different. The VOD library is growing fast for 3D content systems. I spent 10 years in the CE industry, and new features begin on the high-end models. You never sell as many of the high-end models as mainstream. That trickles down in one to two years to mainstream products. The risk factor is if they decide to put some other feature in. At CES there were many new models. It is trickling down. Some of the technologies are competing between different approaches. It doesn't matter as a customer whether you want passive or active glasses, the signal will work on either one. Some people prefer one type over the other."
- "For television audiences, sports in 3D is the big draw, and that's the differentiator. The other thing that works well is the arts and theater performance. Concerts, music type programs, awards shows. You may see some of it in theatrical. They keep trying to create these special concert events and as far as I can tell it's not taking off."
- "We'll see the most glasses-free in mobile phones and tablets. They lend themselves to autostereoscopic much more than your living room. We'll see handheld devices that do autostereoscopic. We're many years away from it being in the living room. By its nature, autostereoscopic technology is a single-viewer experience, and that works for one device. It doesn't lend itself well to multiviewer. With many people walking around a living room, it's hard to control. It's got to work anywhere in the room, and we're not there yet. There is no glasses-free movie technology. That'll be in the home sometime after we get glasses-free in the theater. The technology will start there. Then there's a hope we'll have it in the living room."

3) 3D TECHNOLOGY PROFESSIONALS

All four sources said demand for 3D content is growing. Adoption of 3D TV will happen but is being held up by the high cost of monitors and 3D glasses, and may be preceded by adoption of 3D gaming on PCs and small mobile devices. Tools for 3D production for the Internet are beginning to become available. This is expected to open the 3D medium to amateurs and eventually the young YouTube demographic.

➤ Senior product manager for a leading provider of video playback software

This source said the cost of 3D monitors and the eyewear requirements are limiting the growth of 3D among PC users, but he expects simpler glasses options soon. Interest in gaming will help 3D to grow, but ultimately demand for 3D on PCs will depend on movie content, either on disc or streaming.

- "Demand for 3D content is strong. However, PCs equipped with 3D monitors are still a very low percentage. I think the cost and the active-glasses system are limiting user adoption."
- "In the near future, we will see more passive glasses for 3D on PC and eventually autostereo glasses-free. I think by then, consumer acceptance will grow."
- "Availability of content is still a key since not all movies are released in 3D yet. We've developed a 3D technology to let users do real-time conversion of all legacy 2D content—DVD or video—into stereo 3D."

3D Content, Movies and TVs

- “Gaming is definitely a big push for 3D, but gaming only represents a small fraction of the entire PC ecosystem. I believe movies, via disc or on-demand, will be the key for 3D to grow in the consumer segment.”
- “The major challenge that we have to overcome in bringing 3D to PCs is the lack of an industry standard. Windows OS does not offer a Stereo 3D framework, so we’ve had to develop private APIs [application programming interfaces] with NVIDIA [Corp./NVDA], AMD [Advanced Micro Devices Inc.] and Intel [Corp./INTC] so we can enable Stereo 3D on those independent hardware vendor platforms.”
- “We partner with various 3D format companies. RealD is just one of them. As the leader in market share for PC players, our mission is to support as many 3D formats as possible, such that our users don’t need to look for yet another player when it comes to different media formats.”
- “RealD is a strong partner as they offer good technology in backward compatible 3D with previous broadcast systems. Visual quality as well as cross-talk issues are both well handled.”

Gaming is definitely a big push for 3D, but gaming only represents a small fraction of the entire PC ecosystem. I believe movies, via disc or on-demand, will be the key for 3D to grow in the consumer segment.

*Senior Product Manager
Video Playback Software Provider*

➤ CEO for a maker of 3D models and software that allow artists to create in 3D

This source reported a big market for 3D tools that allow hobbyists and creative professionals to create in 3D, with interest so far being driven more by movies and games than TV.

- “I don’t think the 3D TV sets have had an impact yet, but 3D movies and gaming are big. Ten years ago, 3D was so high-end; it wasn’t something that people were used to. But now that it’s coming down to a consumer level, people aren’t intimidated by it like they used to be.”
- “I think interest in 3D is going to be driven from independent and consumer-level producers. Everybody has the desire to create, and that’s why we’re going after what we feel is the bigger portion of the market—the hobbyists, the creative enthusiasts. Companies like Avid [Technology Inc./AVID], we’ve heard that one-third of their business is the creative enthusiasts, and that’s a really high-end tool. If they’re experiencing that at their price point, that just shows there’s a huge opening at a price that’s more affordable.”
- “It’s the YouTube generation coming of age. There are a lot of people that are going to want to see this type of content and the 3D experience.”
- “Where I see us playing a part is more in the YouTube style of independent films rather than trying to become a supplier to the big Hollywood visual effects companies. The slogan we’ve kicked around is ‘Pixar to the People.’ Trying to reach people who have talent but have not necessarily broken the ice in the professional arena.”
- “We do some stuff with animated films, but mostly it’s for creative hobbyists that like creating still art or animation. We do have stuff that ends up in games and animated films, but the bigger portion of our customer base really is the hobby-level developer.”
- “We haven’t seen the uptake yet, the big growth [in demand for 3D tools] yet. We’re working on some heavy technology changes that we think will leverage us into that. We’ve got a Web-based 3D experience that we haven’t released yet, but it will allow for a 3D experience right in the browser.”
- “I could see 3D computer monitors being a driver even before 3D TVs. Our customers are more interested in what software is driving the interaction rather than being able to watch content that’s being created by someone else.”

It’s the YouTube generation coming of age. There are a lot of people that are going to want to see this type of content and the 3D experience.

CEO, 3D Models & Software Developer

➤ CEO for a company that has developed a lens used in 3D movie projection

This source said the profitability of 3D movies compared to their 2D counterparts is leveling out as more 3D films hit theaters. He expects 3D ticket prices to fall closer to 2D prices as 3D becomes a more common experience. Sales of 3D TVs will be slow until prices fall, the amount of content increases and people who have just bought their first HDTV are ready to make another purchase.

3D Content, Movies and TVs

- “3D is going to succeed. This isn’t a passing fad like it was in the 80s and 90s when there wasn’t enough product and it didn’t look really good. There are too many people and too many companies with too much invested at this point for it not to succeed.”
- “In the very beginning of 3D—when *Chicken Little* came out in November 2005 in 84 theatres and for the first couple of years—movies in 3D did 2.5 to four times the box office per screen, on average, than the same movie playing in 2D. That’s leveling out now because there are so many more 3D movies and people are becoming more discriminating about what they’re going to spend an extra \$3 or \$4 or \$5 on.”
- “3D movies will be able to sustain their premium pricing for a while, but at some point prices [of 3D and 2D movies] are going to get closer to each other. There’s going to be more 3D theatres out there, and it won’t be as unique an experience.”
- “The quality of 3D movies is more a question of the quality of the movie itself. In some cases, certain people will do a better job of creating 3D than others, but the technology is secondary.”
- “Somewhere in the range of 60% to 65% of movies lose money. Making movies is a really risky business. There’s an adage that no one ever sets out to make a bad movie, and yet there are lots of bad movies. The quality of movies is such that 3D can’t make up for a bad movie. Visual effects can’t make up for it if you don’t have a good script and good characters.”
- “Warner Bros. got excoriated with *Clash of the Titans* last year because they made a decision fairly late in the game to turn it into a 3D movie, and they pressured and pushed every vendor along the way to get the work done. Sometimes there’s only so much stuff you can put through a pipeline.”
- “For a lot of theater owners, especially in less populated areas, it’s just really expensive for them to install 3D. What they’ve got to do first is they’ve got to get rid of their film projectors and buy a digital projection system and all the bells and whistles that go with that. And once they’ve done that, then they have to go out and get 3D [projection], whether they get that from RealD or any of the other companies.”
- “3D on digital ... can be fairly dark. The images just aren’t as bright as they are in 2D because it doesn’t have to go through a whole bunch of filters.”
- “People will buy 3D televisions although that’s going to be hampered a bit by an insufficient level of content. The other issue is whether they’ll buy a 3D TV after having just got that first HDTV. Prices need to keep coming down on 3D TVs. When prices get down lower and people are ready to make that next purchase, they will probably get a 3D TV.”
- “The other problem with 3D TV is the price of glasses. It’s my opinion that it’s got to be passive glasses to succeed; \$129 to \$149 for glasses is just way too high.”

When prices get down lower and people are ready to make that next purchase, they will probably get a 3D TV.

CEO, 3D Projection Lense Developer

► Director of 3D optics for a manufacturer of 3D glasses for home and cinema use

This source said 3D TV sales are mainly constrained by the lack of content. Some inexpensive 3D glasses available now force the user’s eyes to work hard and can cause eye strain and headaches. His company’s 3D glasses address that issue. He expects passive glass technology to prevail over active shutter for 3D TV viewing.

- “We’re all at the mercy of the content and how much is available. We just need more of those channels to come to market and have an expansive library of content to present to consumers. Once that’s in place, we’re really going to have a business we can go with.”
- “I think passive has a leg up on active just based on being consumer-friendly. Active glasses are more expensive, they’re heavier, you have to charge them. They’re also limiting from a design standpoint because they have to have a flat lens. I think you’re going to see passive win out in the not too distant future. It’s going to take some time because the TV manufacturers have a lot invested in active screens and there’s a lot of inventory out there, so they’re not necessarily going to shift gears immediately.”
- “Vizio jumped into the market [for passive TVs] in January, with a small launch, but in April and May there will be more people jumping into the market: LG, Vizio, Philips [Electronics N.V./AMS:PHIA/PHG], and Toshiba [Corp./TYO:6502]. Our product works across platforms, which is very different from the active glass, which is very platform-specific. With the active shutter glasses, if you have a Samsung TV and I have a Panasonic [Corp./TYO:6752/PC], you can’t bring your glasses to my house.”

3D Content, Movies and TVs

- “We really have the only truly corrected optical 3D experience, meaning that when you see an image coming through the glass, it doesn’t have to be corrected by your eye. There’s no distortion. Your eyes don’t have to work to correct the image. When your eyes do have to work, with an inferior product, you’re going to get eye strain and eventually headaches. That’s apparent when you watch a movie to some degree, when you’re watching for 1.5 or 2 hours, but when it’s really going to start to kick in is when people start watching passive 3D TVs at home for hours on end, or gaming for hours. The eye strain and headaches are really going to kick in.”
- “You can use our glasses in RealD cinemas, which in North America represents about 85% of the screens, and you can also use them with passive TVs.”
- “Our 3D glasses are retailing at \$120. Some people would say that’s high. But if you buy a \$3,000 television, you’re making a huge investment. You’re also going to buy a Blu-ray player, stereo surround-sound equipment, and you’re not necessarily going to use the cables that come with the set; you’ll buy some really nice HDMI cables. There will be other accessories they upgrade. ... If you were to use glasses that cost \$15 or \$20, you’re not going to gain the full benefit of this equipment you just invested in.”
- “We’ve seen [glasses-free, autostereo] technology for a while, and we haven’t seen it improve a great deal over the last few years. It works pretty well on a really small screen like a PDA, but as the screen gets bigger, the technology gets more difficult. We still feel like, from what we hear on autostereoscopic, it’s still a few years out. Just to get the technology right, it’s going to be a while.”

4) TV MANUFACTURER

This source said more 3D content and lighter, less-expensive glasses will be the key to fueling sales of 3D sets.

➤ Vice president of communications for a top TV manufacturer

This source said 3D TV sales will rely on lighter, less-expensive glasses and more 3D content, which is already starting to ramp up. Sales of 3D TVs were strong through the holidays, and the ramp-up of 3D sales was solid in 2010 compared to the launch of other new technologies.

- “Our 2011 3D product line has both active shutter and passive eyewear, but we truly believe the [passive screens] are a game-changer. This is going to bring 3D into the mainstream. All of our consumer research is showing that people prefer the [passive] approach 3 to 1 over active shutter glasses. They’re lightweight. They’re inexpensive. You don’t have to charge them. And the overall experience is better—you don’t have any flicker; you have a very wide viewing angle; you can lay down on the couch and watch 3D and not lose the signal. There are a lot of benefits to it.”
- “With 3D being a bit of a unique feature, it’s more of what we consider appointment viewing. You’re not going to watch *The Today Show* in 3D probably in our lifetime. That’s the beauty [of the passive glasses]—you can have 20 of your friends over to watch that big sporting event or special movie with very affordable eyewear.”
- “The price and the complexity and cumbersome-ness of the active-shutter glasses we think are an impediment to the rapid growth of 3D, but the price of the sets is not really a factor.”
- “We won’t see [glasses-free, autostereo] in the next year or two. I don’t know if you saw some of the prototypes at the Consumer Electronics Show from Toshiba and Sony. There are limitations—the viewing angle, particularly. If you’re not dead-on in the center of the screen, you lose the 3D. And they’re very expensive at this stage. We’ve had some auto-stereo approaches going back several years now, largely for commercial applications like digital signage, but they’re still not ready for primetime yet, even there.”
- “What’s really going to spur interest in 3D TVs is going to be content. This is not unlike the early days of HD TV, which didn’t really take off until there was a critical mass of content out there. We think 2011 is going to be an important year as we see an increasing amount of content, with new cable and satellite channels delivering 3D content. It’s exciting to see ESPN3D go 24/7. 3D gaming is also going to be a driver. The whole ecosystem of 3D is going to grow the market.”
- “Sales [of 3D TVs] exceeded our expectations in 2011, and we had very healthy sales through the holidays. The Super Bowl wasn’t in 3D, so that was not really a driver. But some of the college sports that we saw on ESPN3D last year were a help.”

3D Content, Movies and TVs

- “I get asked often, ‘Wasn’t that a disappointing year for 3D TV in 2010?’ From our standpoint, maybe it’s a question of perspective, but as an initial launch year with the industry selling 1.4 million 3D-capable sets, that’s a strong launch year. If you look at other technologies and how long it took them to get to 1 million units, it was a great launch year for 3D, particularly in a year that didn’t have much content.”
- “It’s a classic chicken and egg. The movie studios are anxious to get more 3D sets in the homes [to allow for 3D video sales] while the manufacturers and retailers are anxious to get more content out there. It all needs to happen in parallel.”
- “If you’ve watched the consumer electronics market, you’ll note that prices don’t normally go up in our business. That’s a challenge for retailers and manufacturers alike. With razor-thin margins already, new features like 3D and Internet connectivity give us some opportunity for a modest increase in the average selling price on certain models. But in the end, the consumers are the big winners because prices continue to go down.”

It’s a classic chicken and egg. The movie studios are anxious to get more 3D sets in the homes [to allow for 3D video sales] while the manufacturers and retailers are anxious to get more content out there. It all needs to happen in parallel.

*VP of Communications
TV Manufacturer*

5) THEATER COMPANY EXECUTIVE

This source said income from 3D theatrical releases has remained steady. The chain continues to expand the number of digital theaters it has available for 3D releases while focusing on live action, animation and horror genres.

► Investment relations executive for a leading theater exhibitor

The chain’s relationship with RealD came about because of the lower expense of [passive polarized glasses](#). RealD has introduced special glasses for kids in the hope that it might encourage parents to take children to 3D releases.

- “At the time we were faced with the decision, it was Dolby, MasterImage [3D LLC] and RealD. MasterImage was a bit different. Dolby’s model was you buy the equipment and then you had to buy the glasses. The glasses cost \$20 a pair. ... With breakage and washing/sanitizing, we weren’t excited about that. The RealD model is passive polarized; glasses cost 50¢ and are disposable and recyclable. The deal we have is we recycle a new pair of glasses. It represented very low CAPEX. RealD installs equipment at their expense. It puts in the silver screen and that cost us about \$5,000/screen and was our only expense. Before we got to that, we had to make a digital projector. We had to get the financing to convert our circuit to digital.”
- “3D allows us to charge a premium of \$3.50 to \$4. We split that 50/50 with the studios. And we pay 50¢ to our 3D provider, RealD. That leaves us with a \$1.50. With the top 20 films of the year, 3D could be additive, particularly with animated. And then there’s horror where 3D is part of the gimmick and you can turn a \$20 million horror film into a \$40 million film. We had 20 3D movies last year, and we have 35 on the slate this year. 3D tech is definitely here to stay. Last year we had 425 3D capable screens. Today we have 1,800 3D capable screens and will go to 2,600 in early June. We have a meaningful expansion. We’re waiting for more content. This quarter last year we had *Avatar* and *Alice in Wonderland* and it was 24% of the U.S. gross, which was unprecedented. ... Now it’s about 21% to 22% of revenue. It’s about 20% of domestic box office—20% of gross, not attendance.”
- “In a simultaneous 2D/3D release, the 3D screen will outgross the 2D screen by three to four times. From an attendance standpoint it’s two to three times.”
- “We do solicit comments from customers. Price is low on the list. The issues they have to do with problems with other patrons, like disruptions. We don’t see a meaningful difference on concessions with 2D vs. 3D film. There are concession buyers, and those who don’t buy. We haven’t had an issue of premium pricing with 3D. We

In a simultaneous 2D/3D release, the 3D screen will outgross the 2D screen by three to four times. From an attendance standpoint it’s two to three times.

*Investment Relations Executive
Leading Theater Exhibitor*

3D Content, Movies and TVs

started *Chicken Little* at \$1.50 and we've added 50¢ periodically over the past few years. It's now \$4 to \$4.50 in the major markets. That'll hold at least through this year and would only grow in the instance we take the 2D price up. We won't expand the premium for a bit. RealD has two version of glasses: adult and child. On some of the animated content, they didn't have that option before. There are kids who don't like the 3D glasses. We see with animation, we'll get 55% opening for weekend versus 65% for live action or nonanimation. We don't yet know if the kids' glasses are going to make a meaningful difference."

- "Avatar was a truly unique movie. We're down 25% over last year. We expect the film slate in Q2-Q4 to be much better, and we'll get back to flat. There's a lot of 3D content in the pipeline. And I expect it to be 20% or better of gross. How much more? Who knows. It depends on the films. Having 3D itself isn't a help."
- "We're not necessarily expecting 3D to break too many genres this year. 3D is something directors need to experiment with to get good at. We've seen some conversions that were quick and dirty and weren't that great. Also, 3D can't save a bad movie. People liked *Alice in Wonderland* and didn't like *Clash of the Titans*. Both were conversions, post-production. It can be done well. Some of the style of the movie can be lent to 3D. But for all of the stuff that's been done in the last year, it doesn't matter if you have a shallow depth of field, 3D can't fix that. 3D will continue to be a big technology for eight out of the top 10 movies and 16 out of the top 20, which are your big action adventure and animation. And we've seen some horror. I don't see it hitting the romantic comedy."
- "There are a variety of technologies out there that require an active glasses system in the home. It's a very difficult proposition. RealD is working with manufacturers to find a solution for the in-home market, one possibility being passive glasses. Oakley rolled out 3D glasses that are suitable for watching 3D films, either in cinema or in the home. It doesn't impact us because we have a great differentiator with the theater. 3D in the home is a ways off because of viewing angle problems. There are a lot of limitations that have to be solved. If I put it on a wall plasma eight feet away, it's a different visual experience. Even if 3D makes it into the home, I don't think it makes a difference for us."
- "We're monitoring premium VOD. From a practical standpoint, the studios are risking a lot of revenue and profitability for a small incremental value. They're talking about 60 days after theatrical for \$30 in the second quarter. There's a big problem with choosing between a \$4 VOD film that's six months old versus \$30 that's 60 days old. We have a range of leverage and options available to us. We could not put the posters up from a studio in our theater. Progressively, you cannot show their trailers. The prime place for people to get info about upcoming movies is in the theaters. Absent that, we provide that for free for studios. The ad space on a rate card would be \$1.5 billion. We could do limited release or not show movies at all. At the same time, Wal-Mart [Stores Inc./WMT] would have a fit if someone got in front of them in the window of DVD. [Viacom Inc.'s/VIA] Paramount is on our side. It looks like studios are starting to push those windows out further. While we take the lion's share of box office within 60 days, we're more concerned about marketing suggesting that viewers can get it sooner. And that would cannibalize on that end. There's headline risk for us, but we don't think there's hardcore business risk."
- "What you hear from [Disney CEO Robert] Iger is one thing and then the head of [Disney's] Buena Vista says that it's status quo. We're not at each other's throats. It's a pretty amicable relationship. With *Alice*, we moved up the window by 30 days and we worked out a deal for both parties. There have been release issues. When *Shrek*, *Pirates*, *Spiderman* all hit in the same quarter, they cannibalized and clipped a \$100 million off each other."

RealD is working with manufacturers to find a solution for the in-home market, one possibility being passive glasses.

Investment Relations Executive
Leading Theater Exhibitor

6) INDUSTRY EXPERTS

All three sources said the production and popularity of 3D movies were increasing, with animation and action being the most popular genres. Martin Scorsese's upcoming 3D movie opening had the potential to take technology beyond animation and live action. The transition to 3D TV will take a while—five to 10 years, according to one source. 3D TV is being limited by concerns over glasses and angle limitations, but LG's and Vizio's passive glasses are a step toward adoption. One expert is watching for signs of 3D tablets and smartphones driving viewership up.

3D Content, Movies and TVs

► Journalist who covers the entertainment industry and 3D technology

This source said the number of 3D movies going into production continues to grow and that studio executives report seeing a solid return on investment. He does believe audiences are beginning to discriminate between good and bad 3D. In November, Martin Scorsese will be releasing a 3D movie, [Hugo Cabret](#), that could take the technology beyond animation and live action. The source believes the 3D TV transition will be much longer, ranging from five to 10 years. 3D TV sales still are stymied by expensive active glasses that must be recharged. Prototypes of glasses-free 3D TVs are out there, but the quality still has a ways to go. 3D content, including streaming, continues to grow slowly.

- “There’s no pullback in 3D theatrical that I’ve been able to observe. The number of 3D movies going into production continues to grow. I’ve been told that fewer are going into production, but I haven’t seen that. There was a gold-rush mentality, and a lot went into production and there was some haste. ... That has made audiences more wary. The question is, is the 3D return on investment reliable? The answer is that not if it’s bad quality. [DreamWorks Animation SKG Inc.’s/DWA] Jeff Katzenberg has maintained that home video doesn’t have to pay for the production itself because it pays for itself in theater. ... I don’t think 3D is going away. This 3D wave [has been around for seven years and is] still growing. In the 1950s it was one and a half years.”
- “The studios are big on bundled offers where they bundle in copies of films with Blu-ray and 3D TVs. The problem with bundling is that there’s a shortage of titles available in 3D in retail. There’s not a lot of 3D VOD. 3net just launched. The thing that’s evolving is who’s going to pay for the programming because the TV nets are not eager to absorb costs. A lot of infrastructure is still paying for the HD upgrade. Part of the challenge is to use the existing infrastructure, and the answer is the viewer and there’s going to be 3D VOD. I’m seeing 3D streaming opportunities over the Web. Comcast [Corp./CMCSA] OnDemand is doing it. It’s coming. There’s a dearth of 3D content and 3D viewers. It’s just going to take a while.”
- “There’s a prejudice that it’s just kids’ movies. There is going to be more genres and with more ubiquitous 3D theaters, you’ll see more niche work in the market. I don’t think there’s going to be a radical difference in 3D home. Everyone there understands you have to be in it for 10 years or not at all. It’s going to take 10 years to build it up. What are the returns in 3net this year versus next year? That’s way too short a timeframe. Advertisers are getting very interested in it. ... They were left behind by HD and were embarrassed. They’re aware they can’t repeat that mistake.”
- “A few things are going on with 3D TV. I’m a 3D enthusiast, and I’m not eager to own an active glasses systems where it has to be charged and works on an infrared emitter. There are so many things about those glasses that don’t work well with TV. The passive glasses systems are arriving sooner than expected. The images are better, and the glasses are getting better. I have seen one glasses-free system that was close to being a consumer product. It’s not in mass production, but it could be. I think that tech is closer than people realize. It was [3D Fusion](#). They were at CES but didn’t have a booth. 3D without glasses is out there, but it’s all for small screens right now. The big makers have early prototypes, and they’re dreadful.”
- “You have to reach a critical mass. Networks didn’t go color until there was color market penetration for TVs. ... What’s shocking when you look at the history is that there were questions about sound coming to movies. There are health scares around 3D, and I’ve spoken to health experts and eye experts. They say it’s just as easy to argue that flat 2D images are bad to be watched all the time. The health scare issues are mostly not based on rational stuff.”
- “The thing with 3D you have to be careful about is how you craft the film because you can ask people to use their eye muscles in new ways, which can induce headaches. ... That is why Sony has a [3D education program](#). ... I’ve been to meetings to discuss shooting in ways to avoid pain/discomfort in viewers. People have raised concerns. ... The other concern that’s come up recently is with 3D looking too real. A certain amount of unreality helps you with suspension of disbelief. If it’s too real looking, you believe it less. ... That may be why animation is thriving in 3D and live action isn’t.”
- “The most interesting thing that’s happening in TV is that TV is conducting the most detailed experiment in how 2D and 3D programming is different. The 3D telecast is completely different from 2D. They’re not doing that in film. They’re compromising. The 3D experts get it. If you want to see how different 3D is, watch a 3D telecast. The movie business isn’t doing it because they can’t make two movies at once. They’re making the same movie

I’m seeing 3D streaming opportunities over the Web. Comcast [Corp./CMCSA] OnDemand is doing it. It’s coming. There’s a dearth of 3D content and 3D viewers. It’s just going to take a while.

Entertainment Industry Journalist

3D Content, Movies and TVs

with a slight difference with each eye. If you made an optimal 3D and 2D version, they'd have different editing and pace. DreamWorks did a test of a scene from *Kung Fu Panda*, which was their last 2D-only release for animation. They redid the whole scene in 3D, and they showed the two back to back. They discovered that the 3D version had the same block and action, but had different angles with fewer cuts, was slightly longer, but felt just as fast. That experiment is happening in TV and live events. I think the 3D transition will be slower than five years."

- "I saw the [Nintendo] 3DS. It's a small screen [but] not the best screen. It'll be a killer for gaming, not great for movies. People will be used to seeing it in 3D. You'll see glasses-free monitors become more common. You won't see a radical change in the home, just continued growth in theater. Some of the theater gold rush will settle down because the audience is becoming discriminating. Just because you charge more doesn't mean it's better. And no one agrees on what good 3D is. For a producer, you have to know your audience."
- "We were playing with [augmented reality](#) [AR] gaming on the 3DS. AR is where you take the camera pointing out the back of the game and there's an image coming from that camera. When it recognizes that spot, it puts a CG element into the frame of what you see. AR is a coming trend. You can use it for standing on a street and holding an iPhone and you superimpose onto the view stuff like a guidebook. I think the AR with the 3DS is pretty cool. It has 3D augmented reality built in, and I think that's what people will be really excited about. We're not that far away from a world where your zombie game takes place on the street of your neighborhood. No one else sees the zombies. ... It [mixes] the CG elements with the real world."

► Production studio that provides support for 3D video production

This source believes 3D theatrical will continue to grow as more theaters convert to digital projection. Producing in 3D is not as easy for live action films as it is for animated movies. The source was positive on 3D in handheld gaming but believes 3D TVs are a tougher sell because of the glasses and viewing angle problems.

- "There's a big difference between spending one and a half hours at a movie theater and having something ubiquitous in the home. People are getting used to short periods of time with glasses on in the theater. At home it's totally different with multiple people who often don't want to wear glasses. It's a tough nut to crack, and content is tough. Whether it takes off in the mainstream is doubtful. There will be a niche and may be some gaming applications. People aren't going to want to watch TV in 3D unless there's autostereoscopic, which isn't a realistic possibility in the next three to five years. The Nintendo 3DS is a one-person deal where we know how far away from the screen the viewer is. But with a TV, people are different distances away and people are off center. The problem with big TVs is these zones where you have angle issues."
- "We'll see more 3D viewing in the theater. There are more projectors, which was a sticking point. There are good reasons for having 3D capable, digital projectors because you don't have to schlep reels of film. If moviemakers can dual distribute in 2D and 3D, they have leg up. A certain amount of people don't want to see 3D, and another percentage will take some getting used to it. ... It's good exercise for most people's eyes."
- "I think for computer graphics you're going to see a lot of 3D because it's a no-brainer. But with live action, it's a lot of extra work, and people don't want to pay for the conversions. Some don't even like the conversions. For CG, almost all will be 3D. Real CG is [Disney's] Pixar, *Shrek*. It's a lot harder to pull off live action. With CG you have controls over everything. For live action, the production costs are more of an issue, but for CG it will be all 3D, all the time."

► Head of a lab studying 3D technology

This source said 3D theatrical releases grow as the number of digital projection theaters increases. He believes Scorsese's upcoming 3D movie could open up 3D to other genres. On the 3D TV front he sees the introduction of LG's and Vizio's passive polarized glasses as a step toward adoption since they will eliminate the need for expensive glasses. He believes 3D soon will be standard in most high-end TVs, similar to Dolby 5.1 and stereo, since the incremental cost of making a TV 3D is not that high. He is watching the mobile and tablet market for any signs that 3D tablets/smartphones could drive viewership from the ground up.

- "I'm seeing growth, both in terms of production and release. If you go to [Box Office Mojo](#), you can see their compilation of their 3D releases going into the next few years. The number this year is much higher than last year. You'll see U.S. production and all of Asia, which is trying to get into the space. Their biggest problem is localized content that's not interesting to the international market. Green-lighting happens three years prior to release so there's a backlog, and it's something to keep in mind in understanding what the number of releases today means. The number of screens with 3D is expected to grow. A year ago we had 10,000 3D screens, and

3D Content, Movies and TVs

now we have over 20,000 out of 120,000 screens worldwide. That needs to be kept within context of transition from analog to digital, which allows the theater to show live events as well. It's not just 3D, but 3D is a driving force."

- "We have a build-out schedule for 3D. There are two aspects of the audience: the current theatergoer, which is all age groups. After the initial enthusiasm with *Avatar* there was a dip, but now it's gone back to people interested in 3D and people choosing 3D over 2D on a theater. Now people do discriminate and will pay the upcharge if they feel it's worth it. On the generational side, because animation can get the 3D visual experience right more easily than live action, you're seeing more of that and it's geared toward younger people. Younger people view 3D as a must-have and as that generation ages, you'll see more 3D features because it's part of their world. Animation features have done better in 3D than live action because of quality, and the demographic that likes animation wants 3D."
- "The Scorsese movie will be interesting because he's really interested in 3D. I think there is potential for 3D in other genres. As filmmakers learn how to integrate the 3D experience into all genres, it just comes down to taste of the filmmaker. The Berlin festival had a whole section of 3D. There are no reasons you couldn't have two talking heads in 3D. If done well, it could be really engaging."
- "Nobody thought people would want a tablet until Apple did it. The 3D personal experience on TVs, the obstacle there is the in-store demonstration experience. Even now, few stores display TV sets well and offer movie, games, and sports, the three drivers for 3D sales. Retailers know this and once the in-store trial experience improves, you'll see sales. A strong driver for renewed sales are LG and Vizio are starting to market polarized-passive 3D screens. LG has branded it '[Cinema 3D](#).' It's different technology and more expensive, but you can use cheaper glasses. A lot of people find them more comfortable than active shutter. And the 3DS, when that hits the consumer market that will be many people's first 3D experience and could trigger interest. The LG and Vizio have been out for a month. LG and Vizio are doing major marketing pushes to the point where some of their competitors are putting out advertising saying, 'Go with active shutter.' The one important differentiator at the moment is full resolution Blu-ray because active shutter can do that and passive polarized cannot. Passive polarized has other advantages."
- "Right now the screens are really a market power situation with RealD and MasterImage coming behind them. MasterImage has a cheaper solution, and both use passive polarized. The more expensive active solutions like Dolby 3D, they're good for theatrical but I don't know if they'll success in consumer market and it would be nice to have consistency. RealD which dominates in the US and not worldwide may be in a good position because of marketing reasons. Abroad, it's evenly divided between RealD, MasterImage, Dolby and [X6D Ltd.'s] XpanD, depending on which part of the world you're in. The deal that matters between theaters and screen makers, and how they structure revenue share. The fact that the Dolby and XpanD glasses needs to be cleaned and reused is an element of the cost, but Dolby is strong overseas. RealD sewed up a number of deals on good terms. It's a good solution but it was a marketing issue more than technological issue."
- "Making 3D content used to be more expensive. The price is coming down depending on the quality you're trying to achieve. The production costs are coming down, but the bigger issue is do you need to do two edits, one for 2D, one for 3D because of the pacing of the program and the angles? ESPN and Fox Sports currently do a blend. They use the 3D cameras for some of their 2D footage but they still have 2D cameras for the 2D feed. Sports in 3D is amazing, and I'm not a sports fan. It's actually, for me, better than 3D movies."
- "The iPad patent is more concept than reality. It echoes what Microsoft and [Fraunhofer](#) are doing. It's more of a defensive patent, and they haven't shown it works yet. I haven't seen any multiviewer tablets. It's possible technologically and it's just eye-tracking tech. The tablet is where you may see it because only a few people can sit around a tablet. The LG Optimus tablet is 3D capable and it outputs 3D, but its own display is not 3D. That may be a way that tablets lead. If you want to see 3D on the tablet, you have to wear glasses. You might see 3D tablets coming forward because 2D to 3D tech scales to 20 inches. The content file size is not an issue. ... It's the same bandwidth as an HD frame. It's just a question of getting the content licensed and created, which is

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*Head of Lab
Studying 3D Technology*

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3D Content, Movies and TVs

where the Nintendo 3DS has the advantage. There have been comparisons between tablets and 3DS, and both are favorable. The 3DS is the gateway to the consumer market for 3D technology.”

- “I’m going to guess that the first 3D movie platform that’s mobile will be something like the 3G Optimus phone. It’ll take a licensing agreement between the manufacturer and the studio. At one point the president of Nintendo said the 3DS said it could show feature-length movies, but I haven’t seen any deals. Companies like LG and Samsung have 3D phones and have a history because of their 3D sets have a history of deals. Also, telcos have that content. That’s where I would look first. I’d look at phones/tablets before gaming devices.”
- “Augmented reality will be extremely impactful. There have been global challenges that raised funds for libraries in Africa, which was a global augmented reality to find the bad guy on a video game-like platform. It’s a way of using augmented reality and social media to encourage people to do charitable work. It’s a practical implementation of existing reality. It can be part of your GPS. You could walk down the street and it could give you directions. Augmented reality is good for hyper-localization and potentially advertisers. I haven’t seen any commercial devices with it, but I’ve seen demos. It raises social and moral issues. They’re thinking about the Groupon model of walking by a store and you might get a message that says you’ll get a discount on a specific item. It’s also being used for interesting social games. On the Nintendo 3DS it’s really interesting how it monitors someone nearby with a 3DS and can monitor info. It forces you to find new friends and new game players.”
- “The whole do-it-yourself consumer experience is important. The explosion of still cameras and camcorders and the shortage of editing software for consumers on 3D are all issues. You’re seeing a lot of products, but I’m not sure about adoption. ... Look at YouTube’s area. That’s a potential growth area to drive 3D from the bottom up from a niche market. I think the consumer aspect will become a part of this. The 3DS has a camera on it and you can get consumer mash-ups.”
- “I’ve been saying for a couple of months that 3D is just a technical add-on. In the near future it’ll just be an add-on, like a button on your remote. Whether it gets used is different. WSJ ran an article on price reductions, and the pricing is similar to HDTVs. The manufacturers have just decided it’s going to be a build in like stereo and 5.1 on better TVs.”
- “3net just announced that in April they’re going to start showing 3D commercials and content. They say they’re getting a lot of interest from advertisers. There’s a lot of content, not just sports, being produced, anticipated for 3D television. There’s [Wealth TV](#); that is heavily 3D now. They do high-end auto shows and fashion events. It’ll progress as long as there isn’t a business model that emerges to endanger the whole thing.”
- “[Carmen 3D](#) is going to be showing in a couple of weeks. That’s one of the motivators to transition to digital in theaters. You can do that in off hours to better utilize the theater. You can show a program like that at 10 a.m. in the morning.”

7) CONSUMER ELECTRONICS STORE ASSOCIATES

Three sources reported mixed 3D TV sales during the holidays and for the week leading up to the Super Bowl. One said post-holiday sales exceeded expectations, but another reported selling only one 3D set in the past month. One source believes 3D TVs are a fad and that people will tire of wearing the glasses. Common customer complaints included headaches from viewing 3D content and 3D TVs’ shadowy screens. Sony’s [HX800](#) 3D TV model was sold out at one source’s store. Other stores reported that LG and Samsung offered the best-selling 3D TVs.

➤ Home theater sales manager, Southern California

This source sales for 3D TVs since the holidays have beat expectations, likely because of price cuts, and were higher during the week leading up to the Super Bowl than over the holidays. Sony’s 55-inch HX800 is the store’s best-selling 3D TV and has been sold out for all of this company’s locations in the district. The HX800 has been discontinued to make way for an upgraded version. Customers do not like wearing 3D glasses and have reported some glitches with the technology, such as shadowing. Many customers are waiting for Google’s glasses-free 3D TV to hit the shelves. No online content providers have made 3D movies available via live streaming.

- “We’ve done really well with sales, particularly the Sony HX800. We’ve been sold out of that one for about a week.”
- “Sales for the Super Bowl were really good, better than Christmas.”

3D Content, Movies and TVs

- “Our expectations for sales have been met, but we know that there are some glitches that are important. The screens are still shadowy, even on the Sony, which is the best TV we have. And a lot of customers don’t want to wear glasses at home. I’m hearing a lot of them say they’ll wait for Google’s glasses-free TV because they prefer that, and they also are anticipating the technology to be much better. Personally, I can’t stand 3D glasses for anything, not even in the theaters. I am too distracted by them and they all seem so big and clunky, and again you get the shadowing. I’ve even gotten headaches from wearing them.”
- “I’m sure the price cuts have had an impact. Otherwise, I think we’d have had more people hold off over the last few months.”
- “The LG is the least popular 3D TV in the store. Samsung’s 3D TV is our second most popular behind Sony.”
- “As far as content goes, they really don’t have that many titles out there right now, and most people are concerned about that. There isn’t any 3D content on networks, so it’s about the movies. I expect that will have a lot of people holding back until they start releasing new titles.”
- “Most of our customers [for 3D TVs] are male between 40 and 60.”
- “Our HD TV sales are stronger than 3D. I think that will change once Google’s 3D version comes out.”

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*Home Theater Sales Manager
Southern California*

Reporter Observation: The store had little traffic, but a few customers were buying regular HDTVs. The display for Google TV, which is not 3D-capable, was the most prominent in the section. 3D shelf inventory comprised three games and five movies. All 3D TVs were slashed in half. The Sony HX800 was cut from \$3,999.99 down to \$1,998.99 while Sony’s 46-inch 3D LED LCD HDTV was \$1,499.99, down from \$2,499.99.

➤ Sales associate, Chicago

This source said 3D TVs will become more popular once they are easier to use and the technology improves. LG will be the first to launch an active 3D TV, possibly this year. This source has been at this Chicago store for a month and has only sold one 3D TV. At her former store outside of St. Louis she sold two 3D TVs a day over the holidays. Samsung 3D TVs bundled with freebies have been the best sellers; the average Samsung bundle cost is \$1599. The store was sold out of this Samsung offering as well as several other TV models as new stock will arrive in early March. Sony 3D TVs are the slowest 3D sellers. The top-selling 3D glasses are from Samsung and LG while Panasonic’s glasses have sold poorly because of weight and bulk.

- “LG is coming out with the first active 3D TV. 3D TVs are either passive or active. With passive, the TV does the shuttering and with active, the glasses do the shuttering. Now, all 3D TVs on the market are active. So, after LG introduces it, the other companies will want to follow suit. This new technology will spark more interest in 3D TV’s. I also think people do not realize a 3D TV converts to a 2D TV. ... Once the public is more informed about the technology and the technology improves, we will sell more 3Ds. They just need to make them easier to use and advertise it better.”
- “Everyone is in the industry is interested in the new LG since it is the first passive 3D TV. It might be out this year. It was actually on the floor at the CES conference last year. The word is with passive 3D, you will lose some picture quality. So I asked our LG rep about it ... and he said the picture is the same and as good as the active TV. You apparently do not have to use glasses, but I do not know how that would work. Once a customer knows they do not have to spend \$400 for a pair of 3D glasses just to view the TV, they will be more apt to buy the 3D TVs. The prices of 3D glasses are what really hold some customers back from purchasing now.”
- “This is generally a slow time of year for us. The holidays are over, and football season is over. I have been at this store for a month and since I have been here, I have only sold one 3D TV. My associates have sold a few but not many recently. At the store I transferred from outside St. Louis, I sold more, especially during the holidays. This Christmas, I was selling two 3D TVs a day.”
- “Customers like and purchase the Samsung 3D TV bundles the most. Panasonic followed suit and has one now, too. Samsung switches their bundle offer every week. Now, we are out of the starter kit for the Samsung bundle, so we are offering customers a free Blu-ray instead. A few customers complain about the switch, but overall customers love any freebies they get. We do not sell many Sony 3D TVs because the 3D is not as good as Samsung’s or LG’s. Sony also rarely offers bundle packages. Picture quality and the package deals are what really sell the Samsung 3D’s. Our typical Samsung bundle costs \$1,599 and you get everything you need with it. We are sold out of it now.”

3D Content, Movies and TVs

- “We are getting new 3D TVs on the floor in the next few weeks. We have been selling the floor models right off the floor as we are running out of some product. We have several holes in the TV display wall and do not have TVs in stock to put in their spaces. ... Most of the TVs around \$1,000 are selling out or sold out.”
- “Many of the popular 3D movies are only available when you purchase a particular brand of 3D TV. For example, you can only get *Avatar* in 3D if you buy a Panasonic 3D TV. *Monsters vs. Aliens* is only available as a promotion with a Samsung 3D TV. Sony has exclusivity for the 3D version of *Cloudy with a Chance of Meatballs* and *Alice in Wonderland*. These promos do not really affect a customer’s decision on what 3D TV to purchase.”
- “Many of our customers look at the 3D TV and try on glasses at the displays. A customer either likes it or they don’t. A customer who likes it wants it done right. They are into the technology. I have had several customers tell us they shopped 3Ds at other stores, and they do not view the televisions right. We set up everything right so the customer is viewing true 3D. They appreciate it, and they end up purchasing from us because we showed them what they are actually getting for their money.”
- “Panasonic 3D glasses are the heaviest and most bulky on the market. ... I would say Samsung is No. 1, LG is No. 2 and Sony is No. 3 in 3D glasses sales, with Panasonic last. Customers also prefer the rechargeable glasses over the battery-powered ones.”
- “3D TVs are a fad, and I do not know if it will last. Most people get tired of wearing the glasses, and they hurt them after awhile. I don’t know how many people will view regular TV wearing the glasses. I just don’t see it. Also, people who wear glasses have to wear their regular glasses along with the 3D glasses to view it. The older generation does not care about 3D TVs at all. With DirecTV, you can upgrade to a 3D box, and they are now offering nine channels broadcast in 3D. It is becoming more popular in that way, but I just don’t know how long it will last. Hopefully, it will catch on.”

I have had several customers tell us they shopped 3Ds at other stores, and they do not view the televisions right. We set up everything right so the customer is viewing true 3D. They appreciate it, and they end up purchasing from us because we showed them what they are actually getting for their money.

Sales Associate, Chicago

Reporter Observation: During Blueshift’s one-hour, midweek visit, store traffic was slow. One male, approximately 35 to 40 years old, tried on Samsung 3D glasses. The other customers were males ages 25 to 40. No TV purchases were made during our visit. Four associates were in the home entertainment department. A large, Samsung 3D display was behind the customer service counter. The store had three end-cap displays of 3D TVs, one for Sony and two for Samsung. We also observed a 40-foot interactive 3D display with 3D TVs from Samsung, Panasonic and Sony. The home theater section had an interactive 3D display with a 58-inch Panasonic plasma TV.

➤ Store associate, New York City

This source said roughly ten 3D TVs are sold per week. She would not elaborate on inventory, but did report some 3D TVs still in stock. Customers have a price cap between \$2,000 and \$3,000. Sales have improved during February after a slow January, possibly because of the upcoming NCAA basketball tournament. Some customers strongly dislike 3D glasses, but are willing to pay the \$120-plus for a pair.

- “About nine, ten [3D] TVs are sold every week. We have some inventory.”
- “People like the Samsung and Panasonic 3D TVs for their picture quality. Customers know the brands.”
- “It’s about half and half between movies and sports, for why people purchase it. Definitely more men are buying than women.”
- “The most they’ll pay is between \$2,000 and \$3,000.”
- “They don’t like the [3D] glasses, but they’ll buy it if they have to. Companies have to find a way to make it so that people don’t have to wear them.”

8) 3D TV CUSTOMERS AT CONSUMER ELECTRONICS STORES

Both sources were looking at 3D TVs but were not convinced about 3D’s benefits. One source had done extensive research and plans to wait to purchase his 3D TV until prices drop significantly and the

3D Content, Movies and TVs

technology improves. The other source was looking for a TV that can handle 3D content for gaming and movies but was not thrilled with any current offerings.

➤ Middle-aged male, Chicago

This source said his wife and he want a 3D TV 61 inches or larger, but have chosen to hold off because of sets' high costs and the technology's remaining imperfections. The only 3D TV they saw on the market that fit their criteria was a 65-inch Sony for \$5,500. This source is willing to spend the extra money for quality home entertainment products as long as they improve the overall viewing experience. He prefers movie viewing at home and has invested in a home entertainment room, including building his own screen.

- "I have been shopping twice for 3D TVs. My wife and I want one for our home entertainment 'zone.' I looked at two places: Amazon.com [Inc./AMZN] and Costco [Wholesale Corp.]. This was just a few months ago, before Christmas. We looked at a bunch of different brands including Samsung, Sony and Panasonic. We checked them all out. We did not like anything we saw enough to make a purchase. We are going to wait until the technology improves. We feel the technology still has some kinks to work out and we are going to wait until the price comes down. We did not see any major kinks in any of the 3D TVs. It was more subtle things like some do not always look great at certain angles, and they can be a strain on your eyes over longer periods of time. I guess our decision most to purchase now mostly the price for the size TV we want. We want it to be at least 61 inches. I think the biggest 3D TV I saw was a Sony that is 65 inches but it is \$5,500. ... We will wait to purchase until the price drops."
- "I will buy whatever product works better. The glasses are just a part of it of what it takes to make the product great. ... The viewing experience is the most important thing to me. I am willing to deal with everything else as long as it looks awesome. I do not care about wearing the glasses or what they cost, within reason, as long as they are the best for viewing 3D. ... Everything has to come together for us to buy a 3D TV. It has to be the right size, the right price, great picture quality and most of all, we want an awesome overall viewing experience."
- "I have only worn the 3D glasses at the theater. I did not mind them. They were all right. When we were shopping, I did not try on any glasses."
- "My wife and I do have Netflix [Inc./NFLX] and I know they stream stuff to your TV. I stream movies from Netflix right to my phone. I don't know why they could not stream in 3D. As long as you have a 3D TV, they should be able to stream 3D. It might be a bigger file but that is not a big deal if you can handle it and get the proper storage. It will be cool if they do it."
- "Science-fiction 3D movies interest me the most."

We looked at a bunch of different brands including Samsung, Sony and Panasonic. We checked them all out. We did not like anything we saw enough to make a purchase. We are going to wait until the technology improves. We feel the technology still has some kinks to work out and we are going to wait until the price comes down.

3D Customer

➤ 30-something male, New York City

This source said price was not a factor in his search for a 3D TV. He owns a Sony LCD TV, and wants to upgrade for the sake of watching movies and playing games. He expressed little desire to watch sports events in 3D. Also, he did not want to wear 3D glasses but would in order to enhance the viewing experience.

- "Price isn't a factor, it doesn't matter as long as I like it."
- "I have a Sony LCD now. It's fine, but I want to upgrade."
- "I'm not necessarily looking for a 3D [TV] but something that could eventually handle 3D. If it's 3D-ready, all the better."
- "It's not so much sporting events that I want to watch on it. I'm not much of a sports fan. I'm looking to watch movies, play games on it."

3D Content, Movies and TVs

9) 3D MOVIE THEATER BOX OFFICES

Both sources said animation, action, and children’s movies were the most popular 3D genres. Both also said 3D viewing has increased in popularity. Customers have not complained about 3D glasses or headaches but have commented that certain movies are not “3D enough.” One source said his customers still prefer 2D movies over 3D movies.

➤ **Movie theater manager, New York City**

This source said children are more interested than adults in 3D movies, thanks to the number of animation features available in the format. Roughly 1,000 people attended a 3D movie on Feb. 13; attendance figures for other days were not available. 3D prices are \$17.50 for adults and \$13.50 for seniors and children. The manager said his prices are much cheaper than at other theaters throughout New York City, particularly IMAX theaters. He said customers are not bothered by the glasses. Customers often will choose 2D over 3D if given a choice.

- “Kids want to watch 3D movies more than adults. They drag their parents here.”
- “The animations are definitely the most popular genre. *Rango* is going to be big when that comes out.”
- “Lots of our customers are turned off by the prices of 3D movies. They think they’re too expensive, even though we have cheaper prices than other places. We’re \$17.50 when others theaters charge \$20 to \$25 for 3D.”
- “As far as glasses, I think customers will put up with them. They don’t seem to have huge problems with them. No headaches or anything like that.”
- “If they have a choice, people will go with 2D over 3D.”

➤ **Assistant manager of a 20-screen movie theater in suburban Chicago**

This source said 3D’s popularity will continue to grow. The theater has offered twice as many 3D movies year to year. Still, he would like more 3D releases as customers like them and accept the ticket premium. Animation and children’s movies are the biggest draws although the theater has had movies in nearly every genre except drama. [Just Go with It](#) in 2D drew a larger crowd last weekend than [Justin Bieber: Never Say Never](#) in 3D.

- “3D popularity will grow. It is not peaking right now. Attendance depends on the movie. Just because a movie is in 3D does not mean people will see it. It needs to be a good movie. But people really love the 3D so they will keep seeing them. We just need more on the screens. They need to make more of them.”
- “We are definitely seeing more movies in 3D than before. We have about twice as many movies on the screen in 3D compared to this time last year.”
- “The most popular 3D movies are the animated ones and the kid’s movies. They have the biggest draw.”
- “Customers do not care about the extra cost to see a 3D movie. It does not faze them. They still pay for it.”
- “I have heard no complaints from 3D moviegoers about dizziness or headaches.”
- “Some customers complain that a movie is not ‘3D enough’ for them. There is not enough stuff coming out at them. That is what a lot of people think 3D should be—stuff always coming out at you. They do not realize that many of the 3D effects are more subtle.”
- “We have had nearly every genre of movie in 3D with the exception of drama. We have had horror, action, kids, concert films like Bieber, animation—just about everything out there.”
- “I have not heard anything about what will be the next big 3D movie. I should know, but I am not positive.”
- “I have never watched a 3D movie on a TV so I have not seen how it translates. I guess it will depend on how much 3D the movie has in it.”

We are definitely seeing more movies in 3D than before. We have about twice as many movies on the screen in 3D compared to this time last year. ... Customers do not care about the extra cost to see a 3D movie. It does not faze them. They still pay for it.

*Assistant Manager
Movie Theater, Chicago*

Reporter Observation: Out of the 20 screens, four were showing a 3D movie and one screen had an IMAX movie.

3D Content, Movies and TVs

10) 3D MOVIEGOERS

Two of three 3D moviegoers said ticket prices do deter them from seeing 3D movies on a regular basis, while the third said he will never see a 3D movie again because of cost and the 3D glasses. The two younger sources were more open to viewing 3D content, particularly animation.

➤ Female preteen who saw a 3D movie with her three preteen friends

This source reported seeing more 3D movies than a year ago and prefers to see children's and animation features. However, price does factor into her movie decision, and many features are available only in 2D. She would like to see more movies made in the 3D format and more sizes in the 3D glasses.

- "We just saw *Gnomeo and Juliet*. It was good. I am seeing more movies in 3D that I was a year ago. I think a lot of the cuter movies are in 3D. ... My favorite all-time 3D movie is *Despicable Me*."
- "They need to make more movies in 3D. There are more than before, but they still need more. I think they need more animated 3D movies and movies for kids."
- "A lot of movies I want to see are in 2D like *Penelope* and *Letters to Juliet*."
- "I also like 2D because the ticket costs less. It is \$4 more for us to see a 3D movie. The kid's ticket price is \$7 for a 2D movie and \$11 for a 3D one."
- "The 3D glasses are not comfortable, and they hurt a little after awhile. The kid size is too small, and the adult size is too big. ... They need to make the 3D glasses available in more sizes so they fit me and my friends better. That would be the most important thing to do."

Reporter Observation: A number of preteens and teenagers were in the mall on a weekday afternoon given the half day of school. Three of the mall theater's 14 screens were showing a 3D movie: *The Green Hornet*, *Justin Bieber: Never Say Never* and *Gnomeo and Juliet*. Three of four girls, ranging from 11 to 12 years old, were wearing their 3D glasses frames for fun and had popped out the lenses.

➤ 30-year-old female professional, Southern California

This source said she would prefer to watch a 2D movie over a 3D movie, and that going to a 3D movie is not worth the extra money. The customer did say that if box offices lowered the prices for 3D movies and offered better glasses, she would go to 3D movies again.

- "I haven't been to a 3D movie since *Megamind* came out about four months ago now."
- "I can't really afford the 3D version. I have found myself just as happy with the 2D version of the same movies offered in 3D, so I'm not all that interested in paying for them. I don't think there are any movies out right now that I would have to see in 3D to enjoy. I know the new *Harry Potter* this summer is going to be in 3D, but I wouldn't pay for it. All the others were in 2D, so I wouldn't be missing anything."
- "I've noticed that every movie that comes out now seems to be offered in both 3D and regular [2D], which seems to be indicating that it's a marketing technique to get more money off the customer. Frankly, I've made a decision that unless it's a huge successful movie that really demands the 3D technology, I'm just not going to go for it."
- "The only movie I saw worth the extra money for the 3D in the past year or so was *Avatar*, and I think that even that one would have been fine in 2D."
- "I think the prices have gone from \$13.50 for the 3D to about \$15 now. I'm not sure. I haven't paid for a 3D movie in months, so it could be higher."
- "If they would lower the prices and offer better glasses, I might pay the money again. The glasses I wore for the last movie I saw were huge, and they hurt the sides of my head."

➤ Middle-aged male

This source said he would not go to another 3D movie after taking in one film, *Avatar*, last summer. He was turned off by the cost of the movie and the need to wear 3D glasses, but did not experience any physical symptoms from viewing the movie in 3D format. He had not noticed any particular trends in 3D movies. He takes in a movie on the big screen only once every two months. His preferred movie genres are action and drama.

- "I'm turned off to 3D. The cost is prohibitive, and the glasses are ridiculous."
- "The glasses are kind of what get me. I think they're fairly silly. I don't need to watch something in 3D. I can deal with 2D just fine."

3D Content, Movies and TVs

- “I won’t go, at least not in the short term. Maybe I’ll return sometime in the future, but for now I have no interest [in watching 3D movies].”
- “I’ll pay up to \$12, \$13 for a movie but beyond that is a turnoff.”

Secondary Sources

Four secondary sources revealed news about the lack of demand for Super Bowl 3D TV viewing, upcoming 3D video games and their expected boon to 3D TVs, Comcast’s release of a 3D-only channel, and new glasses that will be released in time for the *Transformers 3* movie in July.

➤ Feb. 22 article in *USA Today*

The article discussed the flood of upcoming 3D video games, which could boost adoption of 3D TVs.

http://www.usatoday.com/tech/gaming/2011-02-21-3d-games_N.htm

- “Video games serve as perfect 3-D bait because gamers are not only early technology adopters but also are constantly searching for new ways to dive deeper into rich game environments.”
- “Sony, for one, has a vested interest in seeing 3-D television succeed. The electronics maker sells 3-D Bravia LCD TVs, as well as PlayStation 3 video game systems.”
- “‘For a developer like us that is always trying to make experiences as immersive as possible, it’s very much a natural extension,’ [said Hermen Hulst, co-founder of Guerrilla Games].”
- “Many of the people most wanting 3-D TVs are core console gamers.”
- “Gaming is certainly one of those key content areas that will help the 3-D industry.”

➤ Feb. 18 article from *CNET.com*

The article discussed the launch of Comcast’s new Xfinity 3D channel, which will offer 3D programming ranging from concerts to sports to documentaries.

http://news.cnet.com/8301-13506_3-20033289-17.html

- “The cable provider said that starting at 3 p.m. PT on Sunday (February 20th), its new Xfinity 3D channel will begin broadcasting.
- “Although few people have 3D sets, Comcast said it has seen an uptick in viewers watching 3D content. The company reported yesterday that it has served over 1 million 3D video-on-demand streams.”
- “So far, few consumers in the U.S. are able to capitalize on Comcast’s new channel.”
- “But trouble remains in the 3D market. ... A Deloitte study released in September found that 83 percent of consumers [do not believe 3D is enough](#) to make them want to buy a new television.”

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CNET.com Article

➤ Feb. 22 post from *tgdaily.com*

The blogger provides details on new, official *Transformers 3* glasses that are set to be released just in time for the release of *Transformers 3*, which was shot in 3D.

<http://www.tgdaily.com/games-and-entertainment-brief/54259-look-stylish-with-these-transformers-branded-3d-glasses>

- “It’s more of a mask than a legitimate 3D product. It only costs \$10, which means the lenses are probably nothing better than what you’d get from those reusable theater shades.”
- “They are officially licensed from RealD, though, which is the company that provides 3D technology to most theaters across the country.”
- “The 3D mask will be available May 16, while *Transformers: Dark of the Moon* comes out on July 1.”
- “If you really want to show your love for the transforming robots, though, this is the only way to go.”

➤ Feb. 9 post on Mark Cuban’s blog, *Blog Maverick*

The blogger discussed the lack of demand for Super Bowl viewing in 3D television, and wrote that 3D TV is for shows watched by one or two people at a time.

<http://blogmaverick.com/2011/02/08/the-most-interesting-thing-about-this-years-super-bowl/>

3D Content, Movies and TVs

- “No one was upset that the game was not broadcast in 3D. There weren’t irate call ins to talk radio. In fact, I don’t think anyone realized that it wasn’t being broadcast in 3D because no one cared.”
- “The future of 3D is not sports. A bunch of guys are not going to spend a lot of money on glasses to look goofy sitting next to each other. Nor will they sit on top of each other to watch a non glasses 3D.”
- “That’s not to say that 3D doesn’t have a future on TV. 3D will work for things people tend to watch alone or with one other person.”
- “Having to buy a bunch of glasses for you and your buddies to watch the game ... too much risk that someone takes a picture of the group and posts it on Facebook.”

Next Steps

Blueshift’s next 3D content report will focus on the release of Martin Scorsese’s new 3D film and the anticipated 3D quality improvements. We also will research the growth of 3D movie screens both inside and outside of the United States. Blueshift will try to determine a realistic 3D TV adoption rate, given consumers’ desire for glasses-free TV. Finally, we will monitor the influence of 3D capabilities on gaming, PC and mobile devices and the transition into 3D TV.

Additional research by Adam Lesser, Seth Agulnick, Jacqueline Fox, Kyle Stack and Tina Strasser

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