



How 4K UHD TV, 3G/1080p and 1080i Will Shape the Future of Sports Television Production

How the production formats of today will migrate to the future

Original research from Josh Gordon Group — sponsored by Grass Valley

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Introduction: Why it is Important to Survey Sports Production Professionals?

Sports production video professionals are in a unique position to know how the next generation of television technology will develop. It was sports programming that led the way through the last technology transition, from standard definition to HDTV. Early in that transition, sports enthusiasts and sports bars paid a premium for HD screens and access to programming. As the transition gained steam, the limiting factor became the number of HD sets sold because without an audience, the new format would fail. During the ensuing years there were two events that guaranteed retailers record breaking sales of HD televisions: Christmas and the Super Bowl. Sports early adopters will lead the charge to the next form of enhanced television as well.

Clearly, when sports production professionals have opinions on the subject of technological advancement in broadcasting, it's more than casual speculation. After all, their work in the industry could well set the standard for others to follow. By asking sports production professionals, for example, what format they would use to build a facility in three years, we can gain tremendous insight into which way the future of TV production formats will go.

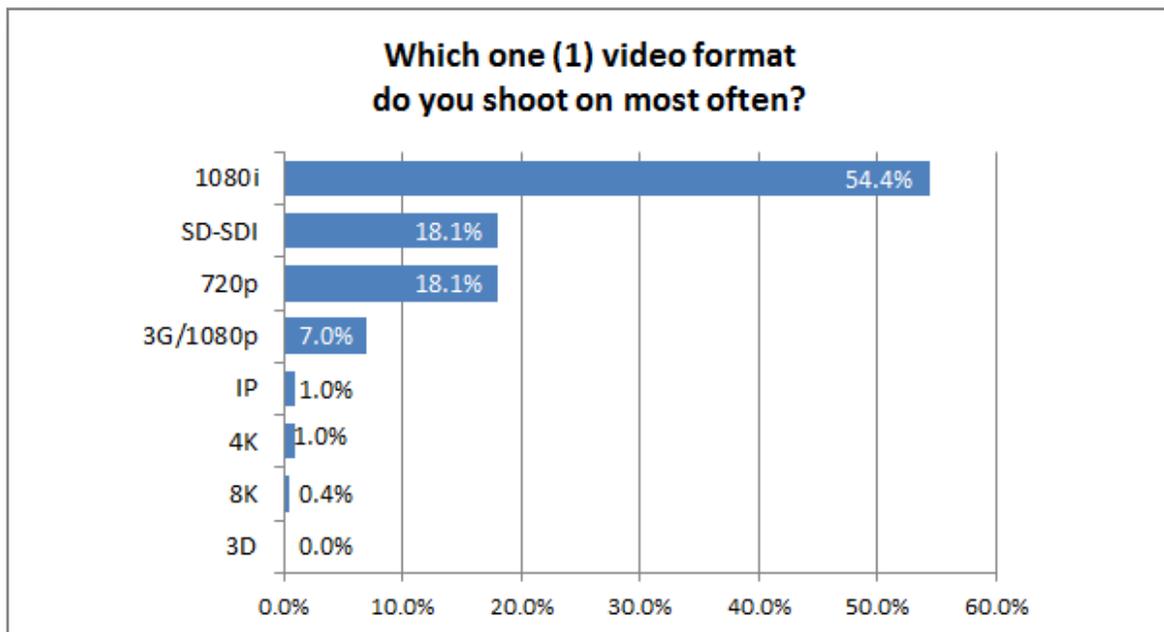
This paper presents a glimpse into the findings of a unique industry survey of broadcast professionals. Designed to evaluate general thoughts about live production techniques, struggles and best practices, the survey elicited a host of valuable general opinions about what drives, and what will drive, certain technological changes. Presented in depth in this paper is the significant growth in preference toward the 3G/1080p and 4K UHDTV formats. This is telling, considering that 3G/1080p is a format that currently has fairly limited applications in broadcast while 4K UHDTV is a format with no current transmission mechanism to bring content into homes.

Technology gurus in Silicon Valley typically look three years into the future when making development and investment plans – this number of years is not chosen randomly. It is generally thought of as the number of years within which reasonable predictions of the future can be made, based on what we know about the present. When looking beyond three years, technology often surprises us. The eight findings presented in this report offer interesting insights into the production formats that are in use in sports video production today, and then project what they might look like three years from now. As noted above, these findings could suggest where broadcasting, in general, is heading — sports production pros are in a better position to look ahead than many.

Finding #1: 1080i is the preferred production format for most sports programming being shot today

When asked which production format they currently shoot on most often, 1080i was the clear favorite with 54.4 percent of respondents. 720p and SD-SDI were tied for a distant second, with 18.1 percent of respondents. The low score for 720p was a surprise, especially since ESPN and Fox sports have standardized operations on 720p. However, there are many other organizations that have chosen 1080i.

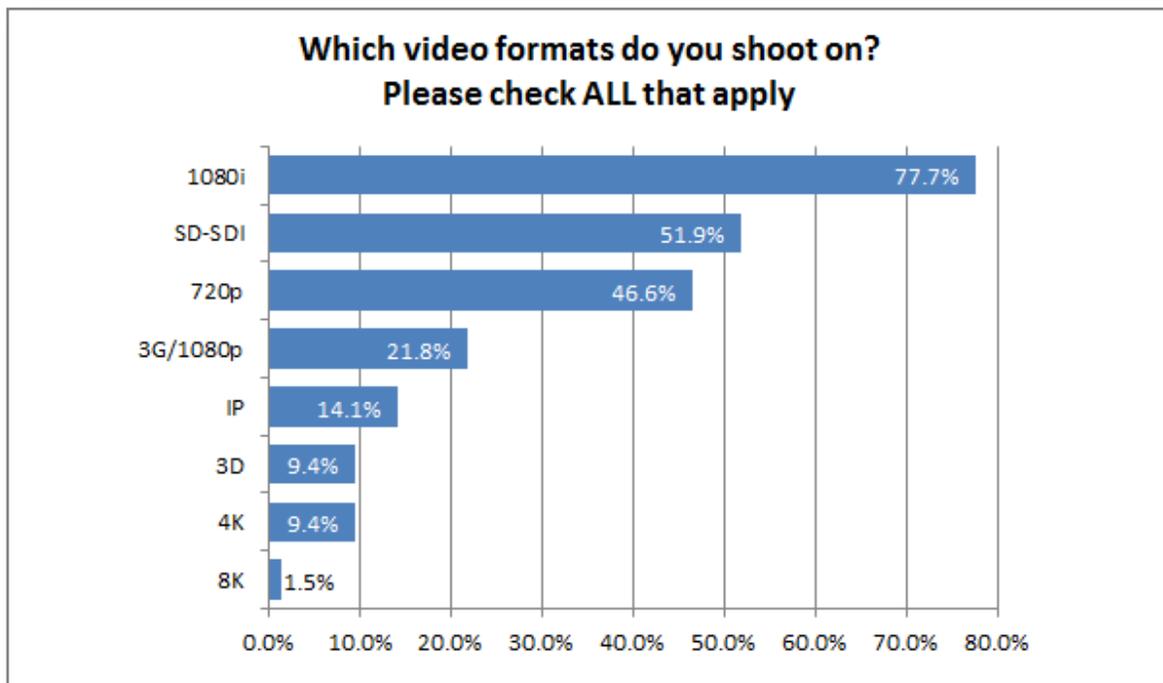
It was also surprising to see how much SD was still in use. When analyzed further, it became clear that almost all these respondents were broadcasters who also use other formats in their productions. Of the respondents who use SD-SDI most often, 53.2 percent also shoot on 1080i, and 28.6 percent also shoot on 720p.



Finding #2: Sports production organizations are using multiple formats and experimenting with them

In addition to their most frequently used format, we asked respondents which other formats they are using. We found that most organizations are often shooting on several formats and probably experimenting with others. Tom Sahara, Vice President of Operations

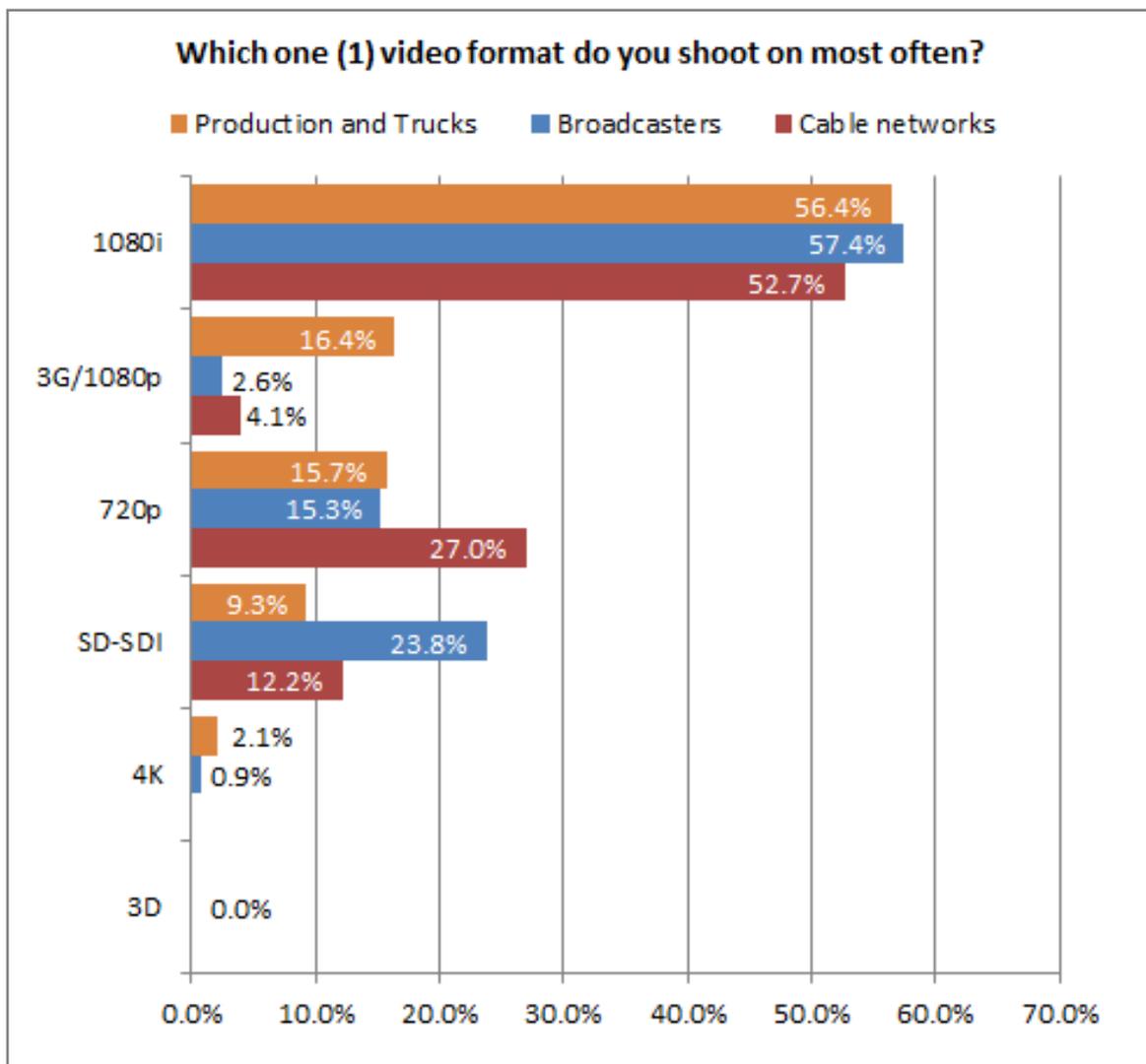
& Technology at Turner Sports, was skeptical: "I think there's a lot of wishful thinking on this chart. If someone has done one 3D project in their whole lifetime, they can check the 3D box, but that does not mean they are doing 3D production on a regular basis."



Finding #3: Format use varies by type of facility

When the question of most-used current format was sub-tabulated for broadcasters, cable networks, and production and truck facilities, variations in usage became apparent. While 1080i was still the most frequently used among all three groups, their second choices were quite different. Among cable networks the second most frequently

used format is 720p, while for broadcasters it was SD-SDI. As for which organizations are deploying 3G/1080p, production and truck facilities outpace broadcasters and cable networks by a wide margin in this category.



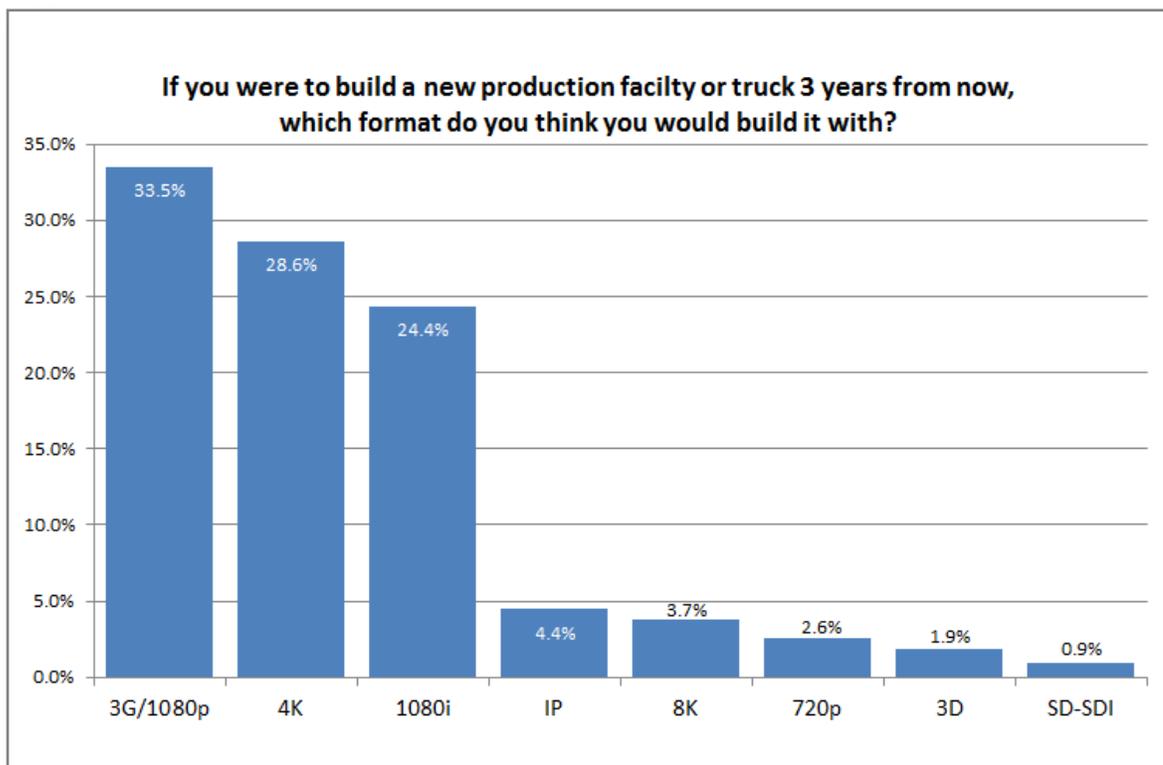
Finding #4: Three years from now, 3G/1080p, 4K UHD TV, and 1080i will be the formats sports production professionals anticipate building into production trucks and studios

We asked respondents who are involved with truck productions what format they would build into a mobile production facility three years from now. We also asked the same question of respondents who work in studio environments.

When the responses of both groups are viewed together, 3G/1080p emerges as the leading choice with 33.5 percent of respondents, 4K UHD TV is the second choice with 28.6 percent of respondents, and 1080i is the third choice with 24.4 percent. 720p shows a huge drop, down to only 2.6 percent of respondents. We assume that those who

are currently using 720p bought it in the past because it was the only viable format utilizing progressive scan. But that will no longer be necessary as we look to the future, since there are now four progressive formats (3G/1080p, 4K UHD TV, 8K and 720p) to choose from.

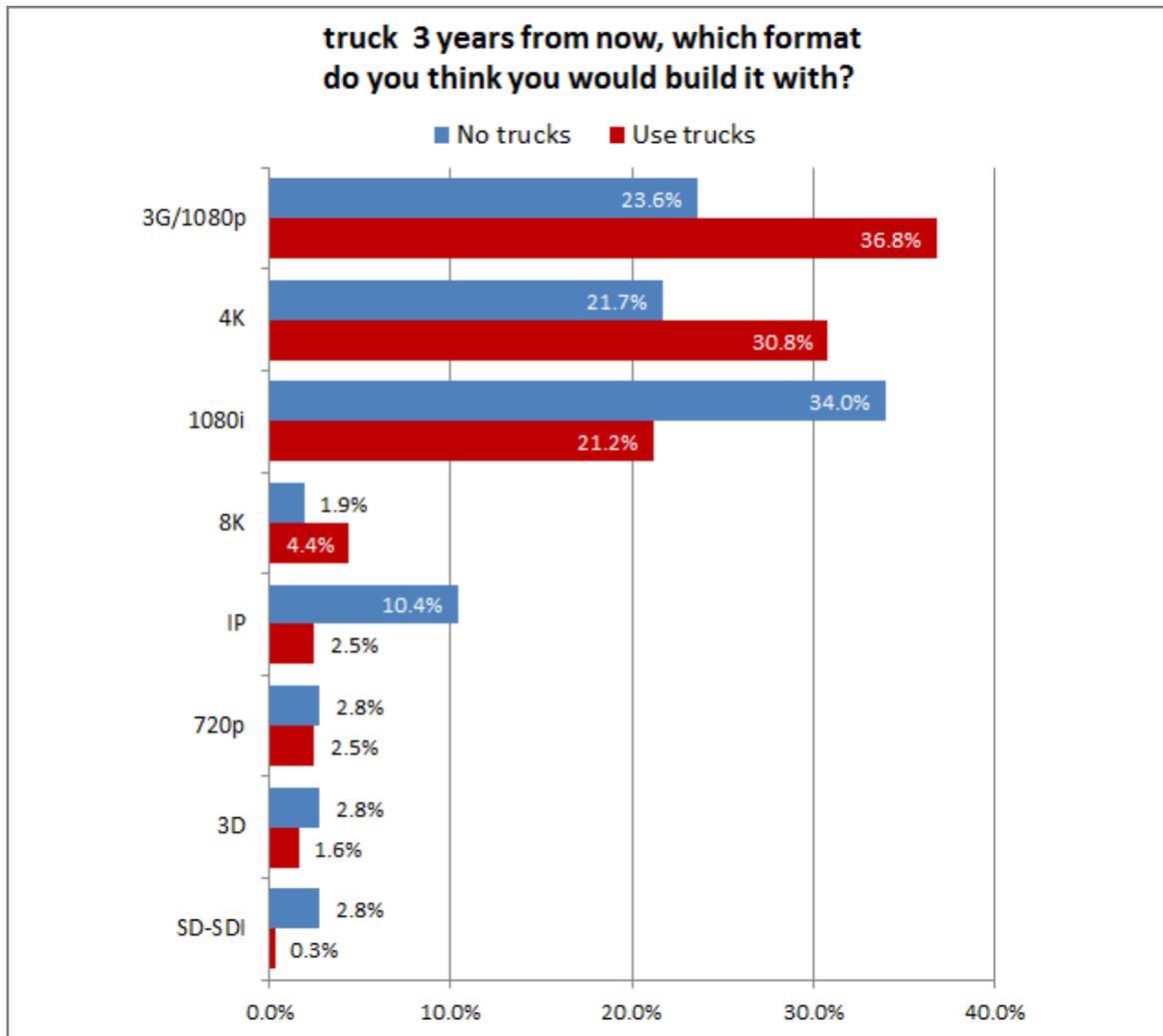
We see 1080i also dropping significantly but still holding about a quarter of respondents. Opting to stay with 1080i could be a practical decision because continuing with current technology is always the most economical path.



Finding #5: Truck production professionals see different formats in their future than do studio production professionals

When most people think of sports production, they envision live games produced with mobile production units. However, a lot of sports programming is created in production studios, such as sports news shows. To see if there is currently a difference in format usage between production work done with trucks and production work done in studios, we compared the two groups.

The comparison showed little difference between them. Truck production respondents were slightly more likely to be using 1080i than studio production respondents, but with all other format comparisons the differences were less than the margin of error of the survey. In hindsight, this makes sense. An organization that sets up mobile operations to acquire on 720p is unlikely to have their studio workflow use a different format. By extension, it is not hard to see why format usage among respondents who work industry wide in trucks and studios should be similar.



However, when the same two groups were asked which production format they think they would build a mobile production unit or studio with three years from now, their answers were significantly different. Truck production professionals picked 3G/1080p as their top choice (36.8 percent), 4K UHDTV as their second choice (30.8 percent), and 1080i as third with 21.2 percent. Respondents who work in studio production see things quite differently. Their first choice of format to build a new production studio three years from now is 1080i (34 percent), second choice is 3G/1080p (23.6 percent) and third is 4K UHDTV (21.7 percent).

Why the big difference? To account for this we first looked at the composition of the truck and non-truck respondent groups to see if they were from organizations whose format preferences might lean one way or another. But, with only a few exceptions, the samples of respondent groups were very similar, containing identical numbers of broadcasters and similar numbers of cable networks and production

companies. The “trucks” group contained all respondents who work at truck companies and most of the respondents from regional cable networks. But the numbers of these respondents were not great enough to account for the scale of the difference between the two groups.

The differences between the groups may have had less to do with the kinds of organizations respondents worked for and more to do with their degree of actual exposure and usage to the newer technologies. Today, the majority of consistent use of 4K UHDTV is for creating instant replays that can zoom in tightly on plays with no loss of detail. In the live production world this is being talked about a lot. But there is little application for this in a news studio. As seen in Finding #3, much of the use of 3G/1080p is by production trucks and production facilities, and not so much by broadcast and cable networks. It may be that the newer formats suffer in popularity among non-truck production professionals because of their lack of exposure and application.

Format migrations

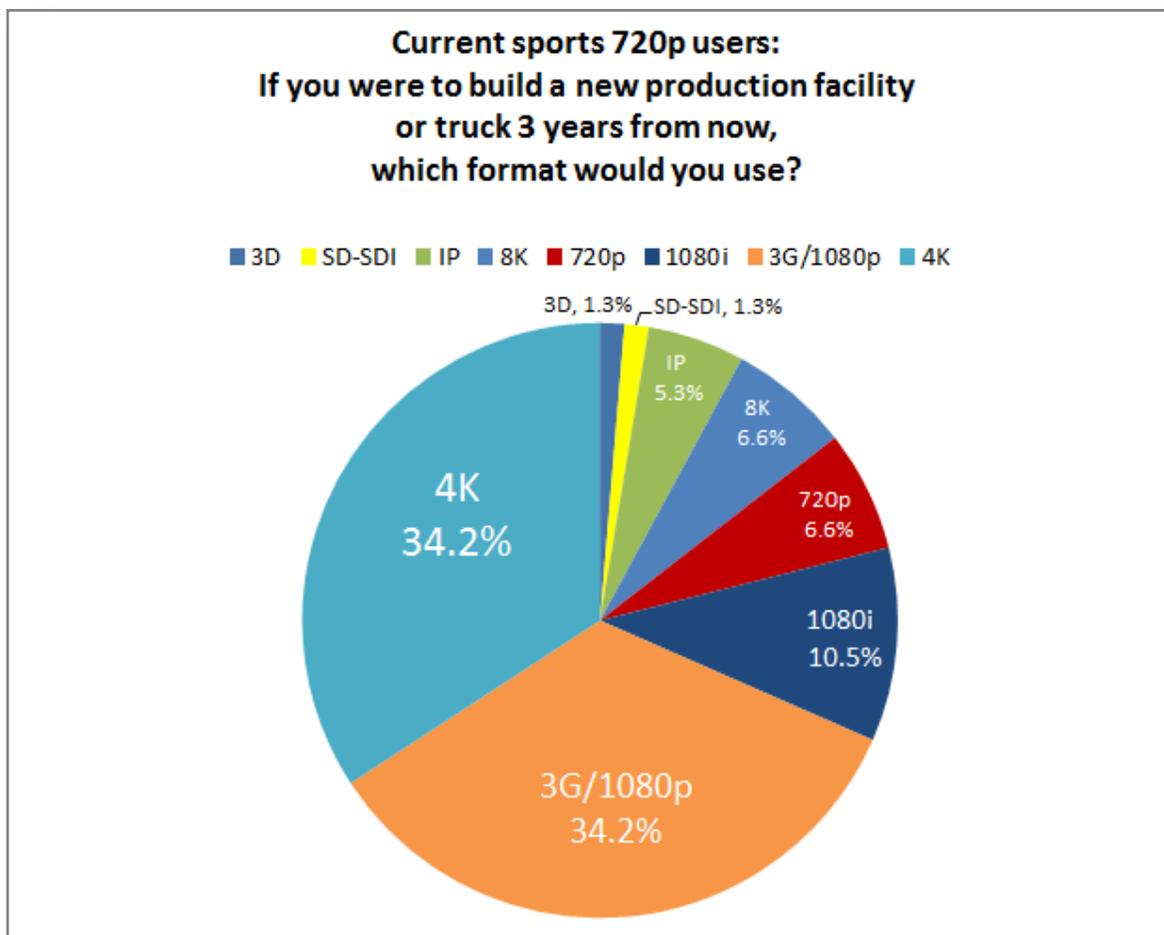
In the previous findings we made two assumptions: 720p will drop significantly in the future because there will be new and better progressive formats available, and 1080i will maintain a strong presence as a cost effective HD option.

One way to test these assumptions is by examining the responses of people currently using each format when asked which format they would migrate toward to build a facility three years from now. The following three findings are based on which format respondents currently mostly use — 720p, 1080i or SD-SDI.

Finding #6: Most 720p users will migrate to other progressive formats

In the total survey sample, 18.1 percent of respondents indicated they were currently using 720p for a majority of their sports video productions. When these current 720p users were asked with which format they would build a production truck or studio facility three years from now, they all but abandoned their current format, with only 6.6 percent opting to stick with 720p.

4K UHD TV and 3G/1080p tied for the most preferred format, each chosen by 34.2 percent of the sample. These two formats together accounted for almost 70 percent of future preference. Clearly, the original motivation to use 720p was the progressive format. Now that there are higher performing tools in the progressive format tool box, interest is migrating to these instead.

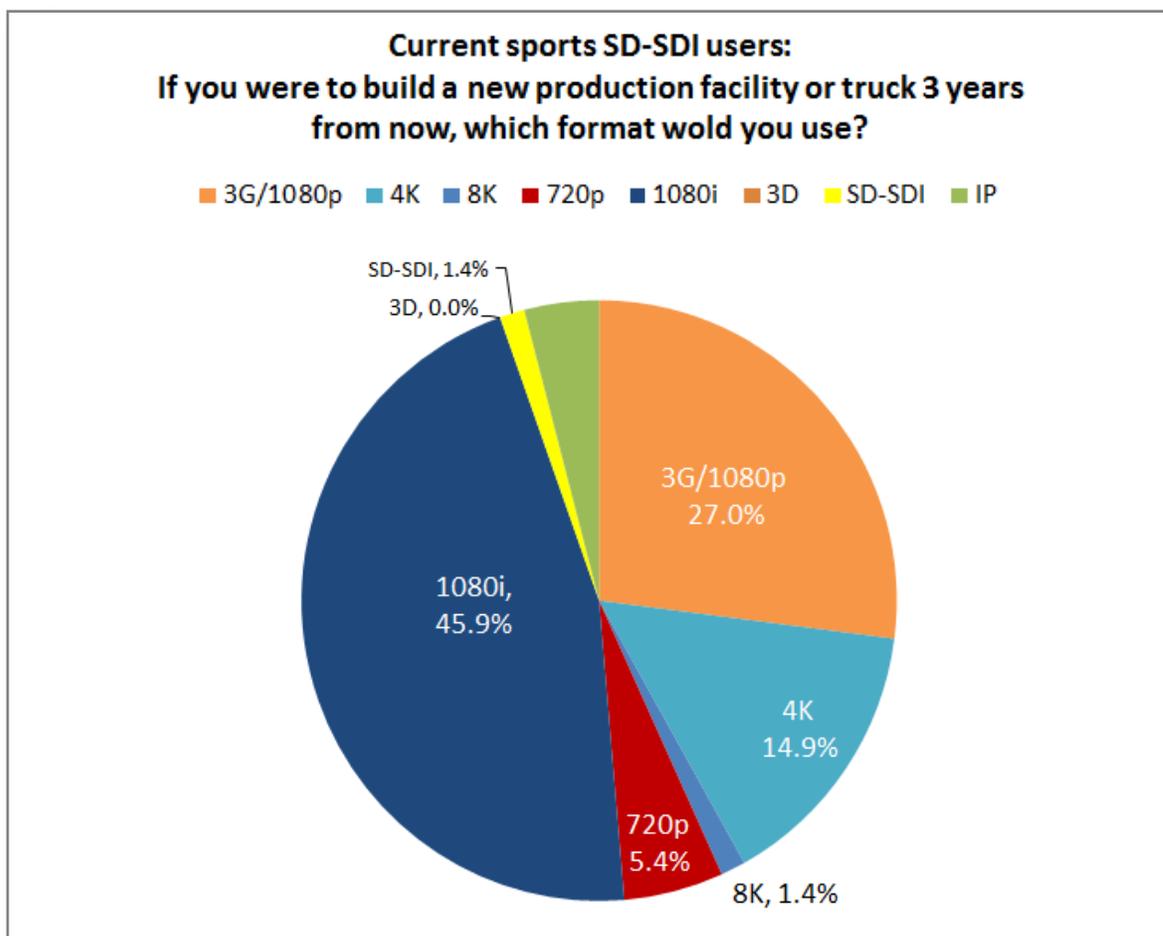


Finding #7: Almost half of current SD-SDI users will migrate to 1080i

Organizations that use SD-SDI for most of their production work are not well publicized but nonetheless accounted for 18.1 percent of our original sample. The question is, which formats would these current SD-SDI users choose three years out?

Almost half (45.9 percent) are looking to upgrade to HD by moving to 1080i. While 1080i might look like older technology to some, to those shooting on standard definition, it is a clear step up. 3G/1080p was this group's second choice with 27 percent of the sample. 4K UHD TV was the third choice, at 14.9 percent. Only 1.4 percent of respondents who now use SD-SDI plan on continuing with it.

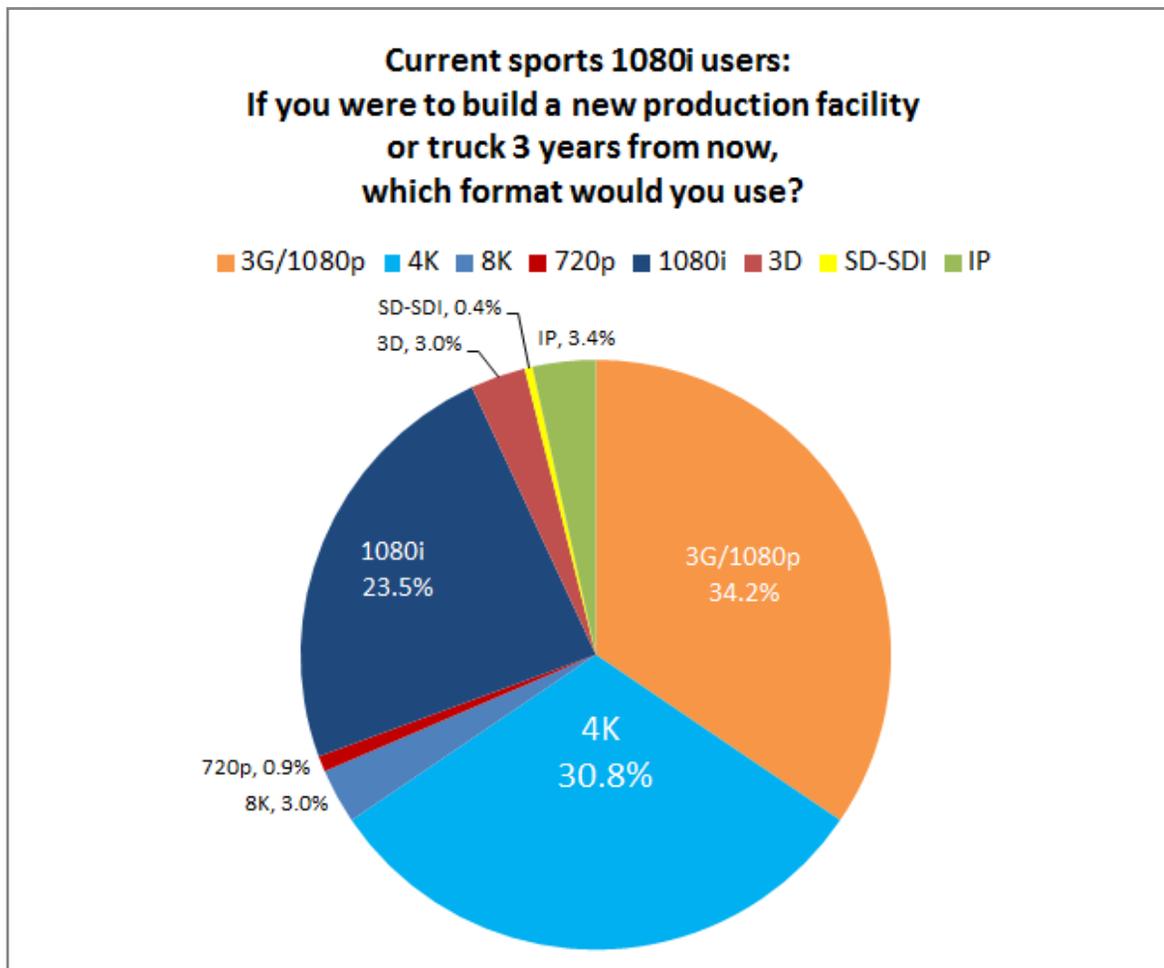
We can only assume that the reason these organizations currently produce most of their programming on SD-SDI is to save money. With this group, future plans also appear to be based on cost-effectiveness. As we move from 1080i, their most preferred format, on to 3G/1080p and then to a lesser degree 4K UHD TV, we are following the cost curve downward. For this group, the goal is to upgrade to an HD format while considering cost.



Finding #8: Current 1080i users will split to 3G first, 4K UHD TV second, while almost a quarter will stay with the format

When current 1080i format users look ahead three years, 3G/1080p is their most preferred format, chosen by 34.2 percent of them. 4K UHD TV comes in second with 30.8 percent of respondents, while 23.5 percent of respondents will stick with the 1080i format.

Of the three formats examined here, 1080i is the only one likely to retain a significant portion of its current users. By contrast, very few 720p users (6.6 percent) and virtually no SD-SDI users (1.3 percent) plan on staying with their current formats. With almost a quarter of current users staying with 1080i and almost half of current SD-SDI users migrating to it, it seems that the 1080i format will be around for many years to come.



In Conclusion

When we look three years into the future, we see significant shifts in the preference of sports production professionals toward the production formats they are using:

In Finding #1, we see that 1080i dominates current sports production and that there is more SD-SDI in use than many thought.

In Finding #3, we see that industry segments favor different formats: Cable networks favor 720p, while production trucks and facilities favor 3G/1080p.

In Finding #4, we see that three years out, three formats will play a role in the future of sports production: 1080i, 3G/1080p and 4K UHD TV. We also see 3G/1080p as the format leading the pack.

In Finding #6, we see that current 720p users will migrate their preference to newer progressive standards.

In Findings #7 and #8, we see that the 1080i format will continue active use because almost a quarter of current users think they will stay with it, and almost half of SD-SDI users think they will migrate to it.

After the survey was completed, we showed the results to some sports production professionals and asked for their input. We heard that those sticking with 1080i were doing so mostly for economic reasons. Those choosing 3G/1080p saw this format as offering a practical upgrade path covering every existing transmittable signal. The 4K UHD TV respondents showed an enthusiasm for the capabilities the format with an expectation that 4K UHD TV transmission channels to the home will become available. Of course, at the time of this writing, there are no commercial 4K UHD TV transmission networks in the United States.

On this last point, we conducted a final interview with Mark Richer, President of the ATSC (American Transmission Standards Committee), who explained the work his organization is doing to bring ATSC 3.0 to market, a transmission standard with 4K UHD TV signal capabilities:

“ATSC 3.0 will be the standard for the next generation of terrestrial broadcast television. The increased capacity of 3.0 will enable the transmission of 4K UHD TV. One of the major challenges is to develop a robust, flexible and efficient physical layer. ATSC issued a call for proposals for physical layer technologies to be used in ATSC 3.0 with detailed responses due at ATSC on September 27th, 2013. Work on other layers of the system is moving forward in parallel. Our goal is to publish ATSC 3.0 as a Candidate Standard sometime in 2015. At that time manufacturers can start developing and testing prototype designs.

“At ATSC we focus on terrestrial transmission but we will continue to work with other organizations to achieve as much commonality as possible between terrestrial broadcasting, cable and satellite delivery methods, as well as Internet delivery.”

To those not familiar with the work being done at ATSC and other organizations, it can be surprising to hear about the huge amount of detailed, coordinated effort going on to bring the next generation of transmission capabilities to the home. While it will take time, says Tom Sahara, “This delay is not a bad thing because it will give us a chance to look at how to build a business out of it.”

As we have seen, there is no shortage of opinion as to which format will dominate the next generation of sports TV production, but the smart money will watch the people who determined the outcome of the last technology transition. As sports TV production professionals figure it out, we will all be watching.

About The Josh Gordon Group

The Josh Gordon Group is a marketing services company specializing in the creative use of research to uncover technology trends and expand clients' understanding of their customers to a new level. Our research-driven process helps organizations succeed by revealing insights about customers not previously known.

In a recent major study, we measured the marketing effectiveness of the top 34 suppliers in the broadcast technology market. This study attracted national attention as the first to document the relationship between product ownership and marketing effectiveness.

Josh Gordon is well known in the television technology market as an early trend-spotter. He is also the author of several books on the sales and marketing process. Learn more at JoshGordon.com

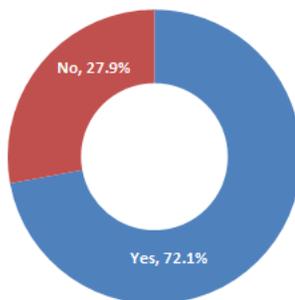
About the survey:

This white paper is one of several created from a study conducted on sports production professionals by the Josh Gordon Group, and is sponsored by Grass Valley. The study was designed to help members of the sports production community better understand the technology trends and challenges they face every day. The questionnaire focused on trends and issues and contained no mention of any supplier brands or products.

The survey was deployed between June 5th and July 10, 2013. The target was high end sports production professionals working with mobile truck production. Results are based on 538 responses, an excellent result considering that sports truck production is a niche within the sports video production industry, which is itself a small niche within the production industry.

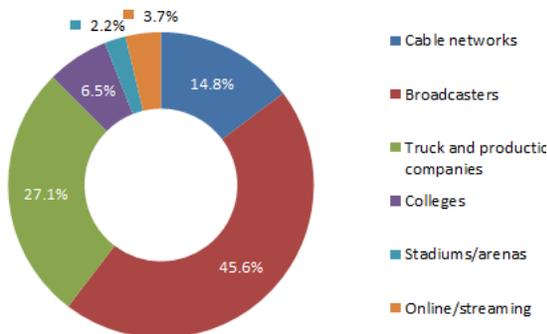
Almost three quarters of respondents are involved in the use of sports truck productions:

Do you use, or are you involved with, production trucks for sports or live events?



The respondents work mainly at broadcast networks and stations, cable networks, and truck and production companies:

Which best describes the company you work for?



We would like to thank the Sports Video Group for their advice throughout the process of conducting this survey.



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