

Digital Immersive Giant Screen Specifications (DIGSS)

DIGSS 2.0 is the third formal revision of the DIGSS 1.0 document that was the result of the Digital Immersive Screen Colloquium for Unified Standards and Specifications (DISCUSS).

This latest version significantly simplifies the structures of the narrative section and the table of specifications compared to earlier versions. The intent is to make it easier for users to locate the information they need to ensure that any digital projection system they are considering as a replacement for their film system (or an early digital system) will provide the highest standards of image and sound quality.

DIGSS 2.0 also recognizes two new technologies that have dramatically enhanced digital image quality: high frame rate (HFR), which increases the number of discrete images captured and presented beyond the standard 24 frames per second that has been the standard in cinema for nearly a century; and high dynamic range (HDR), which expands the range between the darkest blacks and the brightest whites that a projection system is capable of presenting.

Although HFR in particular has met with mixed reactions in the context of dramatic features, its use in the non-fiction, documentary-style films, particularly in combination with HDR, holds the potential for a new type of cinema experience that would offer unprecedented levels of realism and immersiveness.

The authors of DIGSS 2.0 and the GSCA's Technical Committee recommend in the strongest possible terms that giant-screen producers and exhibitors seriously consider the benefits of HFR and HDR in differentiating giant-screen films and theaters from their conventional counterparts.

Download a PDF of DIGSS below.

Digital Immersive Giant Screen Specifications (DIGSS) v.2.0

What is DIGSS and why do we need it?

Download a PDF of What is DIGSS? here.

Digital Immersive Giant Screen Specifications (DIGSS) is an initiative to establish technical specifications for digital theaters with giant flat and dome screens. DIGSS shares many of the goals of the Digital Cinema Initiatives specification (which standardized digital projection for multiplex movie theaters), and presents specifications for the unique requirements of ultra-high resolution digital giant screens that were not part of the DCI specification. DIGSS-compliant theaters may be fully DCI compliant, partially DCI compliant, or non-DCI compliant.

DIGSS describes the technical specifications for immersive cinema films and theaters with the goal of maintaining and expanding a global network that is clearly differentiated from conventional movie theaters, and large enough to support a robust market of films designed specifically for giant screens.

DIGSS is intended to be modified and adapted to the needs of the community it serves as circumstances change. The original DIGSS 1.0 document was published in 2010, and the first minor revision, version 1.1, was finalized in June 2014. DIGSS 1.2 was finalized in September 2015, and DIGSS 2.0 was released in January 2018.

What was the origin of DIGSS?

DIGSS 1.0 is the result of the DISCUSS Colloquium (partly funded by the US National Science Foundation), at which 20 science museum leaders and technical experts met for a three-day conference in Marblehead, MA, in June 2010. There they reached consensus on the first draft of specifications for digital giant-screen theaters in the international museum market.

The intent was to support science museums' needs for immersive learning, particularly with regard to the giant-screen sizes and image aspect ratios that would most clearly differentiate institutional theaters from conventional movie theaters.

By a unanimous vote on September 22, 2011, the board of the GSCA accepted the role of stewardship of DIGSS 1.0, with a goal of further developing the recommendations.

The current primary goals of DIGSS are:

1. To establish specifications for the image and audio portions of GS content that represent the minimum acceptable levels of quality and additional aspirational standards that may be achieved as technology advances.

2. To create theater quality specifications.

Also like the DCI Specification, DIGSS establishes technical requirements and specifications for digital GS theaters, including screen brightness, screen characteristics, speaker placement, theater layout, and more. Establishing these standards will help ensure consistently high-quality audience experiences.

3. To grow the market.

DIGSS will help create an open-access global network of compatible giant, immersive theaters large enough to support viable production of films intended primarily for those theaters.

DIGSS will help create an open-access global network of compatible giant, immersive theaters large enough to support viable production of films intended primarily for those theaters.

DIGSS is intended to provide the following benefits

For Theaters:

- Ensure the maximum number of films available in a compatible digital format.
- Reduce confusion and costs by providing a competitive selection of equipment.
- Maintain the superior exhibition quality for which GS films are known, while differentiating GS theaters from commercial theaters, technically and experientially.

For Producers:

- Provide guidance on capture techniques and equipment to optimize image quality.

For Integrators:

- Inform vendors on designing equipment for the best digital GS presentation (flat screens and domes).
- Eventually provide more equipment choices for digital GS projection (flat screens and domes)

Opportunity

Only a handful of digital multiplex theaters were in place before the development of the DCI Specification. Today, more than 150,000 screens, or 98% of the worldwide commercial theater market, have converted to digital under the DCI specification.

In contrast, according to *LF Examiner*, as of December 2017 there were 231 giant-screen institutional and commercial standalone theaters worldwide that play documentary content, 148 of which (64%) are digitally equipped, most with DCI-compliant systems. (Not all of the 231 are giant screens by GSCA's definition.) Fifty-one former film domes have been converted to fulldome, DCI-compliant digital, or some other digital system.

There are more than 1,400 digital fulldome theaters with projection systems from about ten vendors, each with its own standards and specifications. They exchange programming using the Dome Master specification first drafted in 2004 and now maintained by IMERSA. Over 160 fulldome theaters are giant screens by GSCA definition, but even non-GS fulldomes represent a substantial ancillary market for giant-screen films, making compatibility with fulldome an important feature of the DIGSS specification. Another ancillary market for GS films is the growing number of non-GS flat-screen theaters in museums and other venues.

The conversion to digital is well under way for many of GSCA's members. It may be beyond the scope of DIGSS to standardize all existing digital theaters, but establishing standards for new construction, new installations, and conversions is where the DIGSS specifications have the potential to be most valuable.