What is DIGSS and why do we need it?

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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 compatible immersive cinema formats that are clearly differentiated from those of conventional movie theaters, with the goal of establishing a global, open-access network that is 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, is being finalized for presentation at the GSCA Film Expo and Digital Symposium in March 2013. Plans for a second major revision, v. 2.0, are being made.

In particular, DIGSS 1.1 adheres to the Giant Screen Cinema Association's Certified Giant Screen™ specifications and defines aspect ratios currently in use for both giant flat screens and giant domes, but it does not advocate a particular aspect ratio.

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 (GS) 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.

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The primary goals of DIGSS are:

1. Create standard digital delivery formats
Like the DCI Specification, one of the overarching goals of DIGSS is to establish specifications for digital media encoding formats for high-resolution giant-screen theaters. Standardized digital delivery formats will simplify distribution and provide consistent quality for all programs intended for playback in these theaters. A future goal of DIGSS is to specify encryption methods to protect these digital assets.

2. Create theater quality specifications
Also like the DCI Specification, DIGSS establishes technical requirements and specifications for digital giant-screen theaters, including brightness, contrast, frame rate, color space, screen characteristics, audio channels, theater layout, and more. Establishing these standards will help insure a consistently high-quality audience experience.

3. 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 1.1

DIGSS 1.1 will specify currently available and utilized specifications and formats, including but not limited to DCI. In doing so it will provide a stepping stone for all stakeholders to engage with and benefit from immediately.

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.
- Provide interoperability among different vendors' equipment.
- Maintain the superior exhibition quality for which GS films are known, while differentiating GS theaters from commercial theaters, technically and experientially.

For Distributors:

- Lower costs and time needed to create digital files for standardized aspect ratios.
- Provide anti-piracy protection when encryption is used.

For Producers:

- Enhance and simplify production and post-production by standardizing digital distribution formats.
- Provide guidance on capture techniques and equipment to optimize image quality.

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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 110,000 screens, or 75% of the worldwide commercial theater market have converted to digital under the DCI specification.

In contrast, according to the December 2012 issue of *LF Examiner*, of the 251 giant-screen institutional and commercial standalone theaters worldwide that play documentary content, 55 are digitally-equipped, most with DCI-compliant systems. (Not all of the 251 are giant screens by GSCA's definition.) Only two former film domes have been converted to DCI-compliant digital.

On the other hand, there are more than 1,300 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. Only about 80 Fulldome theaters are giant screens by GSCA definition, but 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 has just begun for most of GSCA's membership. 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.