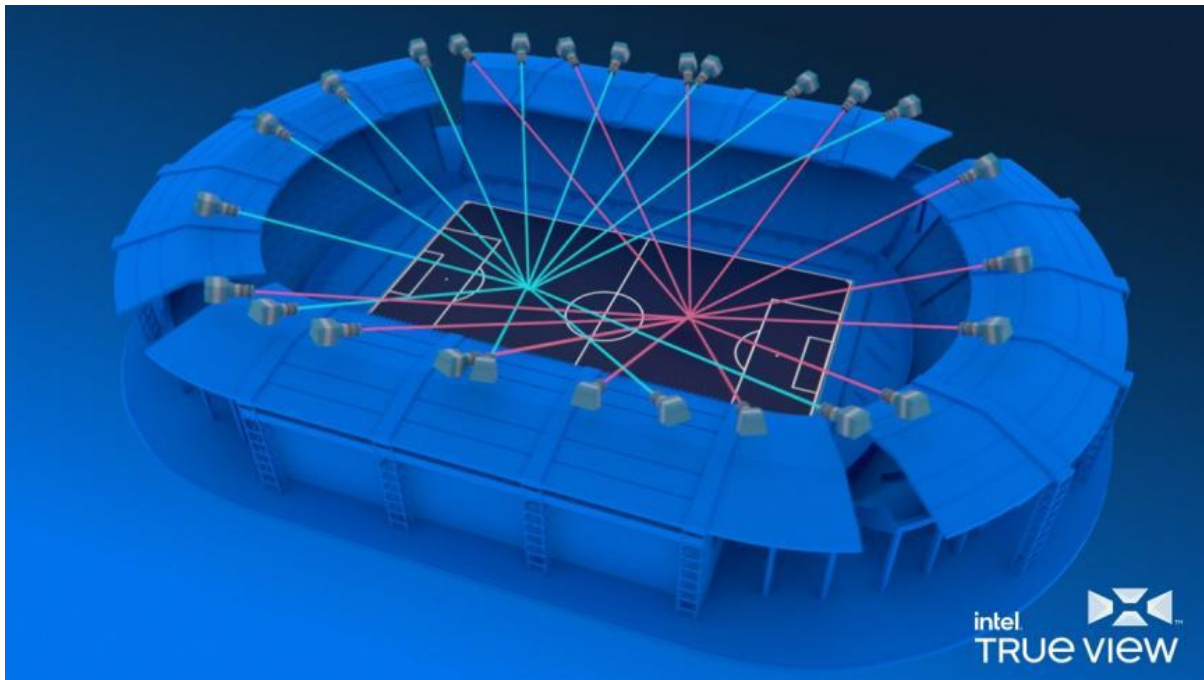


### Intel Sports FreeD (True View) Application Example

Intel Sports developed “FreeD” technology to enhance sports viewing experiences, particularly through virtual and augmented reality. Their partnership with major sports leagues allowed them to integrate high-definition 360-degree video and real-time data analytics, creating immersive highlights and in-game experiences. This technology aimed to provide fans with unique perspectives, such as viewing plays from different angles, ultimately transforming how audiences engage with live sports events. The collaboration highlighted Intel's focus on innovation in broadcasting and fan interaction.



The FreeD technology represented a significant leap in capturing and rendering three-dimensional video for sports broadcasting. This innovation transformed traditional 2D video capture into a comprehensive 3D representation using high-resolution cameras and sophisticated image processing algorithms. At the heart of this transformation is **Gidel's imaging technology**.

FreeD technology, enhanced by Gidel's imaging solutions, was first showcased at the 2012 London Olympics. This demonstration highlighted the potential of 3D video technology in providing immersive viewing experiences. Following its success at the Olympics, FreeD technology was employed in various high-profile sports broadcasts, including NFL games and New York Yankees matches. This adoption by major sports leagues underscored the system's capability to revolutionize sports broadcasting.

Gidel provided powerful FPGA-based frame grabbers and high-speed data processing solutions essential for handling the vast amounts of data generated by the synchronized camera feeds. These frame grabbers captured high-resolution video streams in real-time, ensuring minimal latency and accurate data synchronization across multiple cameras. This capability was vital for creating the detailed 3D models that underpin FreeD technology.



The real-time processing of video feeds to generate 3D models required immense computational power. Gidel's technology enabled high-speed image acquisition, preprocessing, and parsing of the image data, making it feasible to handle the computational demands of real-time 3D video generation. The combination of Gidel's hardware and the FreeD algorithms allowed the system to deliver seamless and photorealistic 3D replays, providing viewers with unprecedented perspectives on live sports events.

The process begins with an array of high-resolution cameras placed strategically around the venue. These cameras capture the action from multiple angles, generating a vast amount of video data. Gidel's FPGA-based frame grabbers come into play by capturing these high-resolution video streams in real-time. The frame grabbers' ability to handle high data rates with minimal latency ensures that all video feeds are perfectly synchronized, which is crucial for creating a coherent 3D representation.

Once the video data is captured, it undergoes preprocessing and parsing using Gidel's technology. This stage involves cleaning up the data, correcting any inconsistencies, and preparing it for the next step. The preprocessed data is then used to create a 3D database of voxels (volumetric pixels). This database forms the foundation of the 3D model, allowing for rendering from any angle. The precision and speed of Gidel's technology are essential in this stage, as they ensure that the 3D models are both accurate and generated in real-time.

Replay Technologies' algorithms take over from here, converting the voxel data into a visual representation that can be rendered on screen. These algorithms utilize the power of Gidel's hardware to perform complex calculations quickly, enabling the system to produce seamless and photorealistic 3D replays. The result is a viewing experience that allows audiences to see the action from virtually any angle, providing insights and perspectives that were previously impossible with traditional 2D broadcasts.

The impact of FreeD technology extends beyond just enhancing the viewer's experience. It has also proven to be a valuable tool for sports analysts and coaches, providing them with detailed visual data that can be used to improve strategies and player performance. The ability to review plays from multiple angles in high definition offers a level of detail and clarity that is unmatched by traditional video analysis tools.

The partnership between Gidel and Replay Technologies, later acquired by Intel Sports, exemplified the powerful synergy between cutting-edge image processing hardware and innovative software algorithms. This collaboration brought about a fundamental transformation in the way sports are broadcasted, making it possible to deliver immersive and interactive viewing experiences to audiences worldwide.

