

## THE GM'S TOOL KIT

What is the pitcher's spin rate? Has a hitter's bat speed slowed? The data at a GM's disposal has increased dramatically. Here's how a 12-camera system, installed at every Major League stadium and developed by Hawk-Eye Innovations, can help a GM and their staff.



### Complete Game

Together, the twelve cameras generate 10 GB of data per second—more than the equivalent of streaming three HD movies on Netflix. The video is sent to a rack of servers which output the full complement of statistics within 250 milliseconds, which is how a play-by-play announcer can tell us that Giancarlo Stanton's home run just rocketed out of the ballpark at 118.5 mph.



### A Pitcher's Duel

A game's most complex and important events occur between the pitcher's mound and home plate. Hawk-Eye blankets this 60.5-foot-long zone with five cameras to follow pitch speed, movement, and spin rate, while also capturing granular data on the pitcher's mechanics. In addition, the cameras register data on the batter (like swing plane and bat speed) and balls in play (exit velocity, spin).



### Stealing Bases

Seven cameras chiefly track players—calculating a base runner's foot speed, say, or an outfielder's route chasing down a fly ball. Hawk-Eye's "pose-tracking" capability monitors 19 different points on every single player's body (much like motion capture in a feature film), allowing for highly detailed scrutiny of biomechanics.



### Center Field

The center-field camera is "the primary spin camera," says Hawk-Eye's Justin Goltz. It tracks the ball from the pitcher's release point to home plate. It can actually see the seams of the ball rotate, which enables it to determine spin rate and axis. To get still more data on spin rate, several teams have added even faster cameras to the standard setup.