

SPORTS TECHNOLOGY

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THE IMPACT OF TECHNOLOGY ON SPORT

ADVANCES IN TECHNOLOGY HAVE HAD A PROFOUND IMPACT ON SPORT INCLUDING:

- ANALYSIS OF SPORT PERFORMANCE AND ENABLING COACHES TO GREATLY IMPROVE THE QUALITY OF FEEDBACK TO PLAYERS/ATHLETES**
- INCREASE ACCURACY IN TIME MEASUREMENTS OF SPORT PERFORMANCE**
- ENABLING REFEREES, UMPIRES AND SPORT OFFICIALS TO MAKE BETTER DECISIONS ON RULE INFRINGEMENTS**
- IMPROVEMENTS IN THE DESIGN OF SPORT EQUIPMENT AND APPAREL**
- PROVIDING SPECTATORS WITH BETTER VIEWING OF SPORT PERFORMANCE**

- **Ticket Purchasing.**
- **More Connected to Athletes.**
- **Modernised Training.**
- **Makes the Game Fair.**
- **Better Coaching and Scouting.**
- **Better Viewing Experience.**
- **Improved Field Conditions.**
- **Weather Control.**



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We Can Now Control the Weather

I couldn't make this stuff up if I tried. China aimed to Control the Weather during the 2008 Beijing Olympics by breaking up clouds that appeared to have rain in them. Not only is this an incredible technological advancement, but it is also downright crazy. I don't see this coming to America anytime soon, but imagine if there was never a rain out again? That would be the life.

IMPROVED FIELD CONDITIONS

- **REMEMBER THE BRADY BUNCH ASTROTURF BACKYARD? WELL, ATHLETES USED TO PLAY ON FIELDS JUST LIKE THAT, AND GOT VERY HURT DOING SO.**
- **NOW, GROUNDS CREWS HAVE LOBBIED THEIR OWNERS FOR NEW, BETTER FIELDS THAT ARE MAINTAINED METICULOUSLY. IT LOOKS LIKE A CARPET OUT THERE, AND I AM SURE THAT THE ATHLETES APPRECIATE IT. THESE CONDITIONS MAKE SPORTS BETTER FOR EVERYONE INVOLVED, MOST SPECIFICALLY THE ATHLETES.**

BETTER VIEWING EXPERIENCE

- **BETTER FOR COACHES: FAME, FILM AND SCOUTING:** SCOUTING TALENT HAS, SINCE THE BEGINNING OF TIME, BEEN BASED ON GUTS, FEELINGS AND INSTINCTS. NOW, THROUGH TECHNOLOGICAL PRECISION, SCOUTS HAVE AN ENTIRE SHEET OF INFORMATION ON HOW FAST AN ATHLETE CAN RUN, HOW HIGH THEY CAN JUMP AND HOW ACCURATE THEIR PASSING IS.
- THESE ARE ALL-IMPORTANT FACTORS THAT WENT UNNOTICED FOR YEARS, AND ARE NOW BEING CORRECTED, HOPEFULLY DECREASING THE NUMBER OF BUSTS THAT SCOUTS RECOMMEND.

HIGH DEFINITION

- **THE HOME ENTERTAINMENT AGE HAS GONE WILD, BUT THEN AGAIN NOBODY IS COMPLAINING. ENORMOUS 50-PLUS INCH TELEVISION SETS NOW DON EVERY LIVING ROOM, AND ARE THE MAIN ATTRACTION TO EVERYONE'S HOME.**
- **WITH TICKET PRICES SO HIGH, STAYING ON YOUR COUCH IS THE PREFERRED OPTION FOR MANY PEOPLE. THIS TOOK A TURN FOR THE BETTER WHEN HIGH DEFINITION BECAME STANDARD TO EVERY TV SET. OF COURSE, THERE WILL ALWAYS BE PEOPLE WITH THE BIGGER AND THE BETTER EQUIPMENT, BUT NOW EVERY AVERAGE JOE HAS CRYSTAL CLEAR QUALITY FROM THE COMFORT OF HIS HOME. WE NOW CAN WATCH THE GAME AND FEEL LIKE WE ARE THERE.**

MAKES THE GAME FAIR

- **THIS IS A PART OF THE GAME THAT MANY PEOPLE HAVE ISSUE WITH. TECHNOLOGY, IN THE FORM OF SYNTHETIC DRUGS, HAS CREATED MUCH OF THE CHEATING THAT OFFICIALS WORK HARD TO ERADICATE. BUT TESTING HAS BECOME MORE SOPHISTICATED, ELIMINATING MUCH OF THE CHEATING.**

BETTER EQUIPMENT

- **WE HAVE TRADED IN WOOD AND RUBBER FOR TITANIUM AND NYLON. IN MANY WAYS, THE EQUIPMENT USED IS JUST AS IMPORTANT AS THE PERSON USING IT. TENNIS RACKETS AND GOLF CLUBS HAVE SEEN THE BIGGEST JUMP IN TECHNOLOGICAL DEVELOPMENTS, WHILE THERE HAS BEEN A SIGNIFICANT INFLUENCE IN ALL AREAS OF THE GAMES.**
- **EVERYTHING FROM SHOES TO DRY FIT SHIRTS HAS SEPARATED THEN FROM NOW. THERE HAS BEEN A NATURAL EVOLUTION THAT HAS BEEN NOTHING BUT GREAT FOR SPORTS**

SAFER FOR THE ATHLETES

- YES, DAVID WRIGHT DOES LOOK LIKE THE GREAT GAZOO FROM THE FLINTSTONES, BUT THIS HELMET IS WHAT THEY CALL A CONCUSSION HELMET. BOTH FOOTBALL AND BASEBALL PLAYERS NEED TO CONSTANTLY WORRY ABOUT THEIR SAFETY, BECAUSE CONCUSSIONS HAVE BECOME A VERY SERIOUS ISSUE.
- TECHNOLOGY HAS MADE LIFE SAFER FOR DRIVERS AND REDUCED THE AMOUNT OF UNWANTED HEAD AND NECK INJURIES ACROSS THE BOARD. WITHOUT THIS TECHNOLOGY WE WOULD NEVER EVOLVE, AND THE ATHLETES WOULD CONTINUE TO GET HURT.

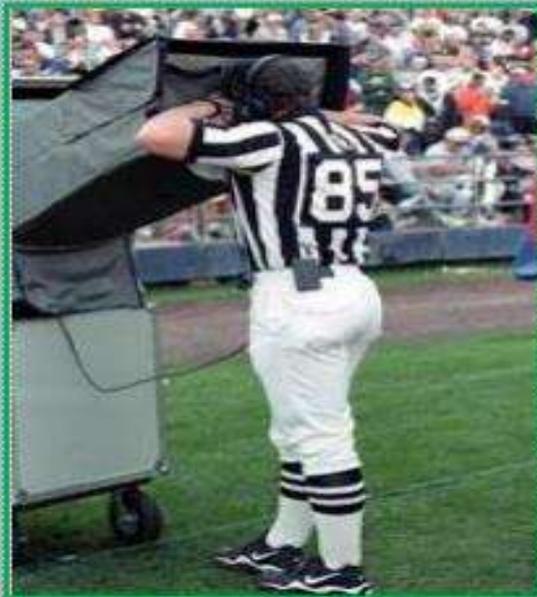
HELPS US BETTER UNDERSTAND THE GAME INFORMATION

- **INSTANT REPLAY**
- **WE CAN WATCH MORE GAMES**

FOOTBALL

Replay Systems

- Replay is controlled from a computer system in the booth.



Challenge Flag

- In NFL you can throw a challenge flag out to see an instant replay of the last play.



BACK

BASKETBALL

Courtside Computers

- Computers with instant replay can be placed courtside in basketball with quick and easy viewing.



Real March Madness

- Intentional injuries are prevented because all mishaps are reviewed for conduct.



The impact of Hawk Eye

Its impact on sport?

This Hawk Eye technology in tennis has led to a change in rules. *(3 challenges per set. If you are successful in a challenge you do not lose a challenge).*



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Other sports.

Hawk Eye technology has also been introduced into cricket.

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Hawk-Eye is a computer system used in cricket, tennis, snookers and other sports to visually track the path of the ball and display a record of its most statistically likely path as a moving image

Hawk-Eye as the most innovative technology provider in sports broadcasting and is a development that will reinforce the group's presence and influence.

•It is primarily used by the majority of television networks to track the trajectory of balls in flight.

•It was developed by engineers at Roke Manor Research Limited of UK in 2001

•A patent was submitted by Dr Paul Hawkins and David Sherry

Abilities Hawk-eye can track any type of bounce, spin, swing and seam movement of the ball.

Give a prediction as accurate as 99.99 percent

Hawk-Eye was used for referring decisions to the third umpire in LBW.

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•Principle of Hawk-EyeA Hawk-Eye system is based on the principle of Triangulation

•Triangulation is the process of determining the location of a point by measuring angles to it from known points at either end of a fixed baseline

Technology Hawk-Eye takes 2 inputs

- **Video provided by 6 different cameras placed at 6 different places.**
- **The speed of the ball. The system rapidly processes the video feeds by a high speed video processor.**
- **Hawk Eye incorporates both image analysis and radar technology.**
- **The six fixed JAI monochrome cameras, with a 120 MHz frame rate, are placed around the playing field**
- **They track the balls entire trajectory, right rom the point where it is released from the bowlers hand to the point the ball is considered dead.**
- **Processor follows 4 Steps(a) identify each frame from each camera, and groups the corresponding pixels to the image of the ball (b) compute for each frame the 3D position of an image thus identified using ball image data from at least two different cameras**

The impact of hawk eye

Is it a benefit to sport?

How has it been received?

Players, officials and spectators seem to have embraced hawk eye.

- *Players feel that the right decision is made and therefore has improved player/official relationships.*
- *Officials have less pressure on them as the technology is a definitive answer.*
- *Spectators appear to enjoy the build up in hawk eye delivering a verdict. (entertainment/drama)*



Mamori is “a mouthguard with built-in sensors that can tell someone on the sidelines when a player has received a serious – yet invisible – injury,” [says Devin Coldeway](#), of NBC News.

This new technology has sensors, along with an accelerometer, a gyroscope, and a magnetometer, which together can help observe movement any force taken on by players during actual games and practices. If the force absorbed by a player is large enough, that information can be received with the corresponding Mamori app on a computer instantaneously. This will allow for trainers to provide treatment quicker to the injured player, because they were able to recognize the concussion at an earlier period of time.

<http://www.sporttechie.com/2013/12/16/the-mamori-mouthguard-can-help-detect-concussions-from-the-sideline/>

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NANOTECHNOLOGY *AND SPORTS*

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NANO PRODUCTS ARE USED IN.....

1. FOOD

❖ NANO -FOOD

2. CONSUMER GOODS

❖ SURFACES AND COATINGS

❖ TEXTILES

❖ COSMETICS

❖ SPORTS

3. AEROSPACE AND VEHICLE MANUFACTURERS

4. MILITARY

❖ BIOLOGICAL SENSORS

❖ UNIFORM MATERIAL

❖ COMMUNICATION METHOD

❖ MEDICAL SYSTEM

5.CONSTRUCTION

❖ CEMENT

❖ STEEL

❖ WOOD

❖ GLASS

❖ COATINGS

❖ FIRE PROTECTION DETECTION

- **THAT OLD SAYING THAT SAYS A POOR WORKMAN BLAMES HIS TOOLS HOLDS TRUE IN SPORTS AS MUCH AS ANYWHERE, BUT THERE'S NO QUESTION THAT HAVING THE ABSOLUTE BEST TECHNOLOGY CAN MAKE A BIG DIFFERENCE FOR THE WORLD'S TOP ATHLETES. ONCE YOU GET TO THE OLYMPIC LEVEL, THE SPREAD BETWEEN FIRST AND LAST PLACE CAN BE TRULY TINY, SO EVEN THE SMALLEST TECHNICAL ADVANTAGE COULD MEAN THE DIFFERENCE BETWEEN STANDING ON THE TOP OF THE WINNER'S PODIUM, OR BEING AN ALSO-RAN.**