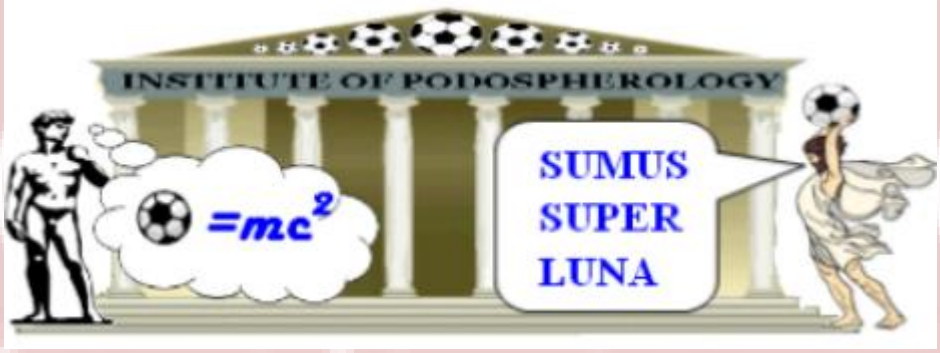

football and technology white papers

Offside Detection Device

A foolproof system of interlinking microchips collectively ensuring accurate offside decisions by officials

by

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Offside Detection Device

Premise

Today, with the speed of football play ever increasing, it has become increasingly difficult for the match officials to ascertain exactly whether a player is offside or not. The assistant referee has to:

- be in line with the second last defender;
- be aware of the attacking players' positions at any one time;
- visually identify the exact moment that the ball is played forward to the attackers who may be judge to be in an offside position;
- to decide whether an attacker in an offside position is interfering with play, even if they do not touch the ball.

Finally, the assistant referee's job is compounded by the habit of many attackers to deliberately stray offside before the ball is played forward and to quickly run onside just before it is played.

Clearly, however fit, able and perceptive an assistant referee is, it is virtually impossible to make an accurate offside decision with the naked eye. The performance of assistant referees is constantly under scrutiny in these days of instant replays and advanced analysis by television pundits. This is leading to decreasing confidence in the ability of officials to execute their duties accurately, professionally and competently.

Proposal

The Institute proposes that, while the assistant referees continue to flag for offside in the traditional way, the methodology for determining the offside decision should be transferred to a technologically proven mechanism which can instantaneously and continuously analyse all the fluid and variable parameters involved in making the offside decision, constantly recalibrate the incoming data stream and ascertain rapidly and accurately whether an attacking player is at any point definitively offside at the moment the ball is played forward and in the player's direction.

In this way, the need for the assistant referee to rely on fallible judgement is eliminated, as are the possibilities of making a flawed decision the likely criticism and derision arising from the decision. Confidence in the ability of the officials to make the correct decision will be increased.

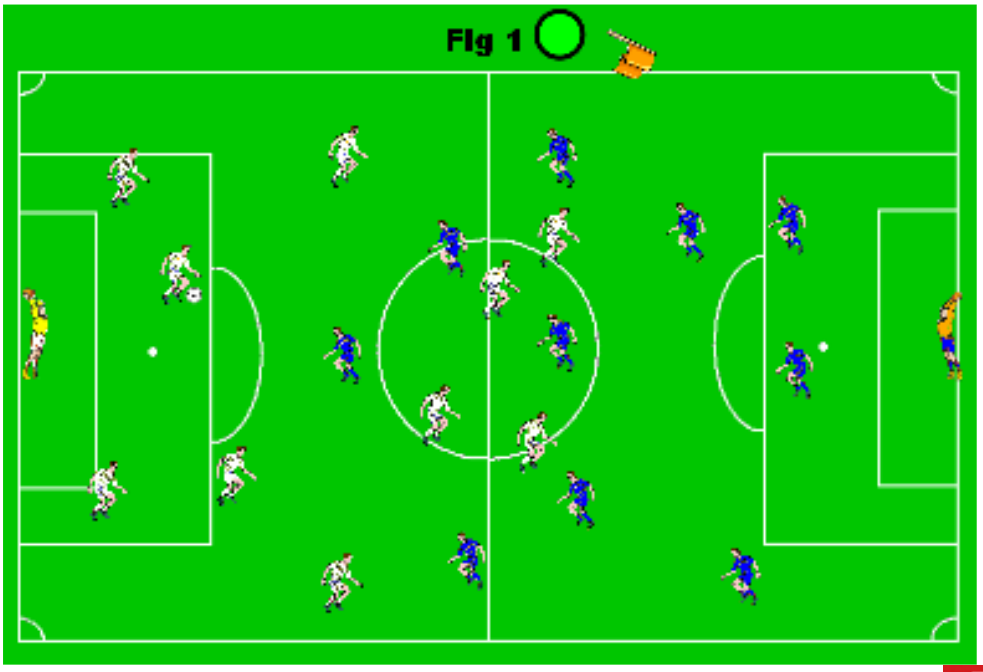
Methodology

The Offside Detection Device consists of the following components:

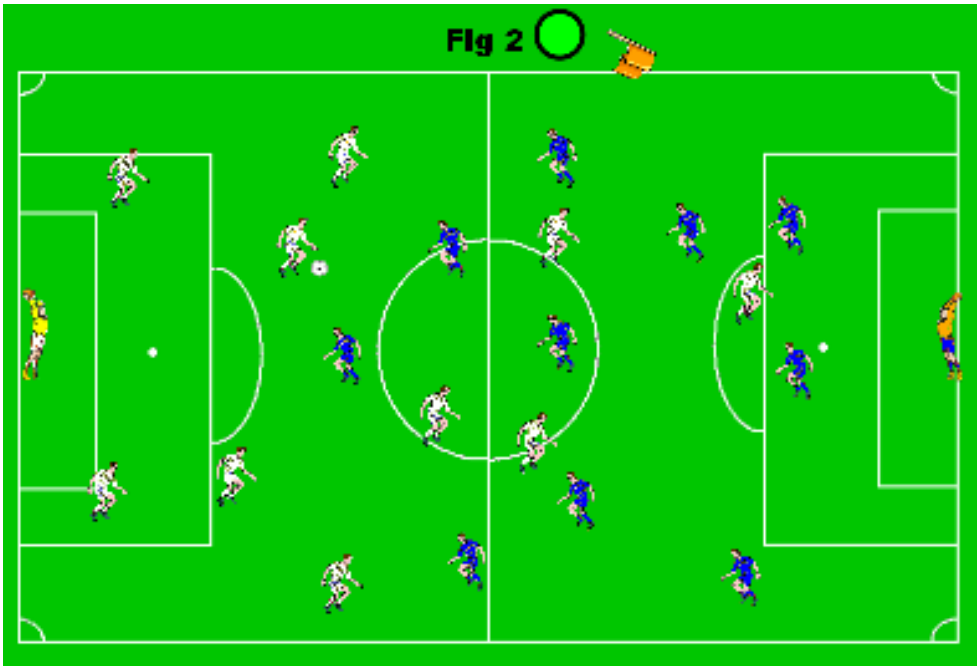
- *a set of microchips for each team, with each chip residing in the shirt badge of each player;*
- *a directionally sensitive microchip in the ball;*
- *a control unit which can receive and analyse the data fed into it by the chips in the players' shirts and the ball;*
- *a powerful, centrally positioned directionally activated magnet;*
- *a set of two magnetic sensors, one placed in the tip of each assistant referee's flag.*

The Offside Detection Device works typically in this scenario:

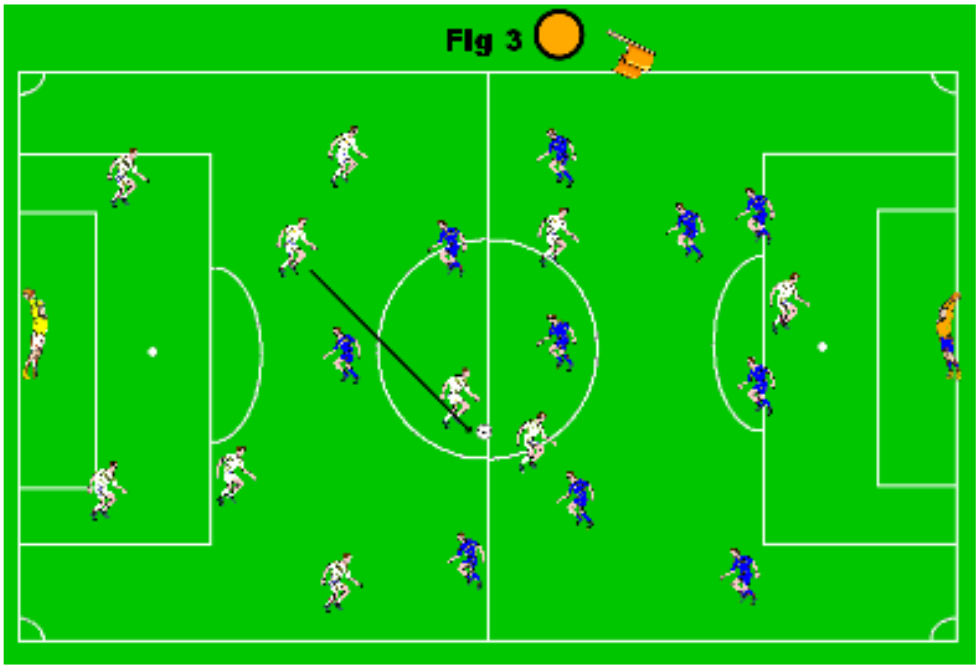
1. For the purpose of this explanation, we will refer to White team and Blue team. In normal play, the device is constantly monitoring the movement of the players and the ball. As long as the players are all onside at any one time, the condition is indicated as "green" *(see Fig 1)*.



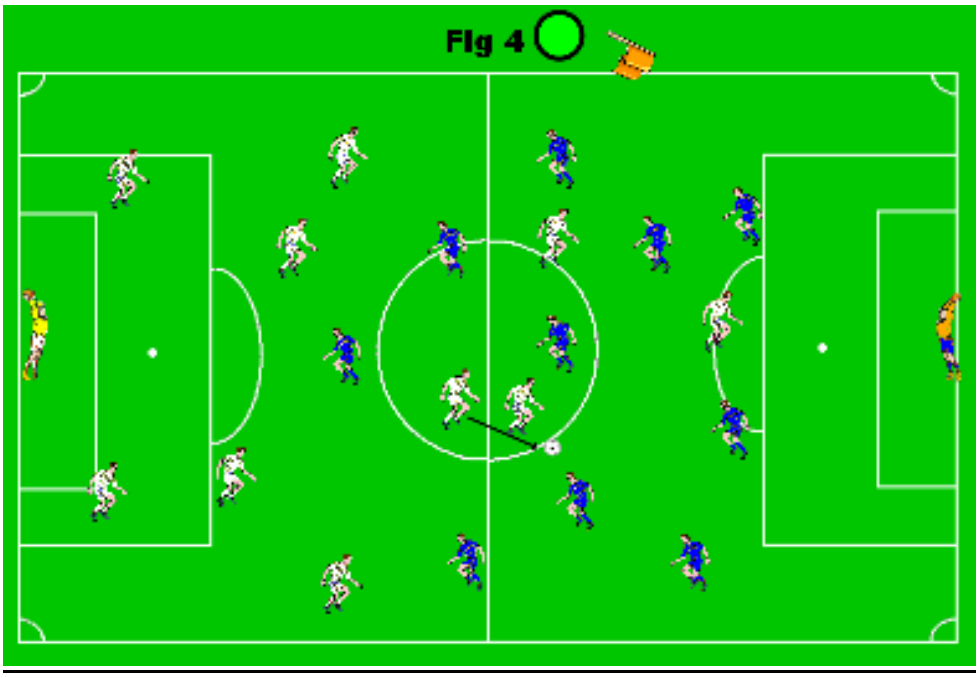
2. The ball is currently in White team's half in the possession of the White team defence. A White team attacker moves into Blue team's half, but not beyond the second last Blue team defender. Condition is still "green" *(see Fig 2)*.



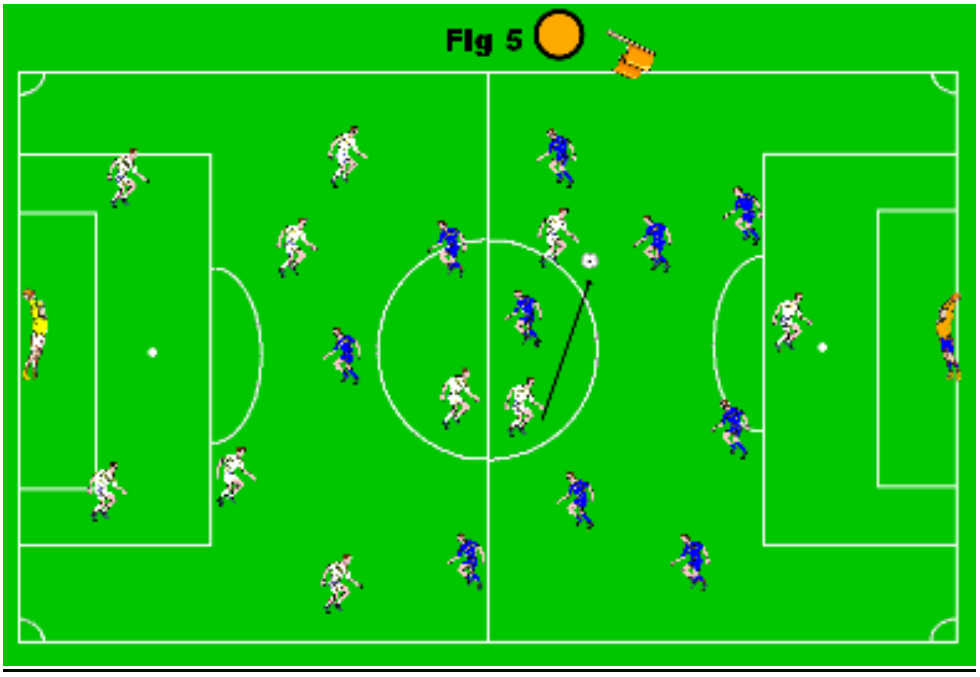
3. The ball is being passed forward by White team. The White team attacker moves forward into an offside position. Condition now changes to "orange" *(see Fig 3*).



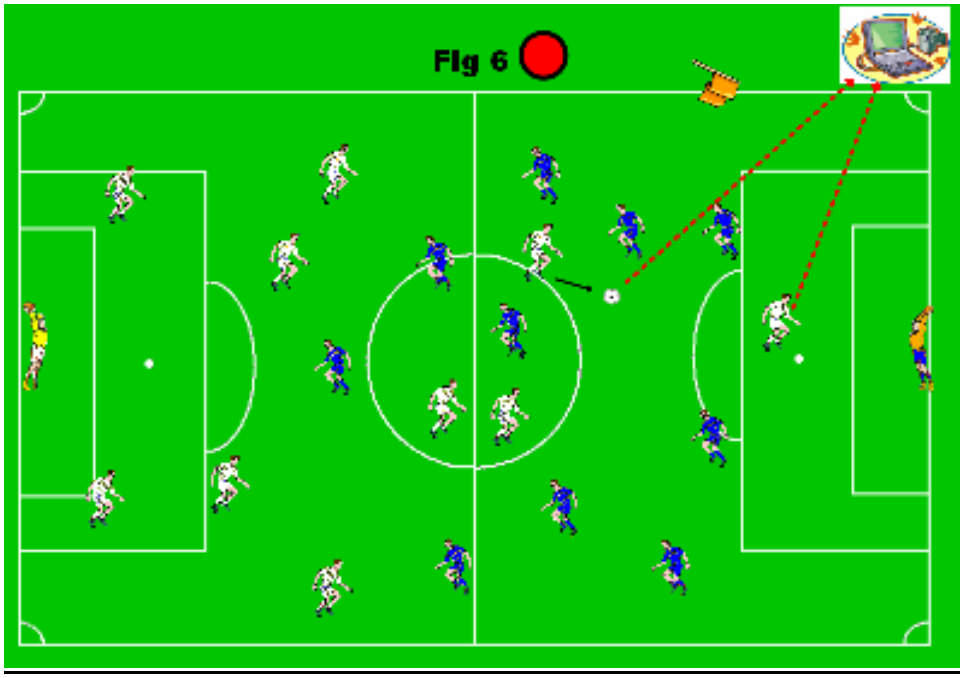
4. The White team attacker moves back into an onside position. Condition changes to “green” again *(see Fig 4*).



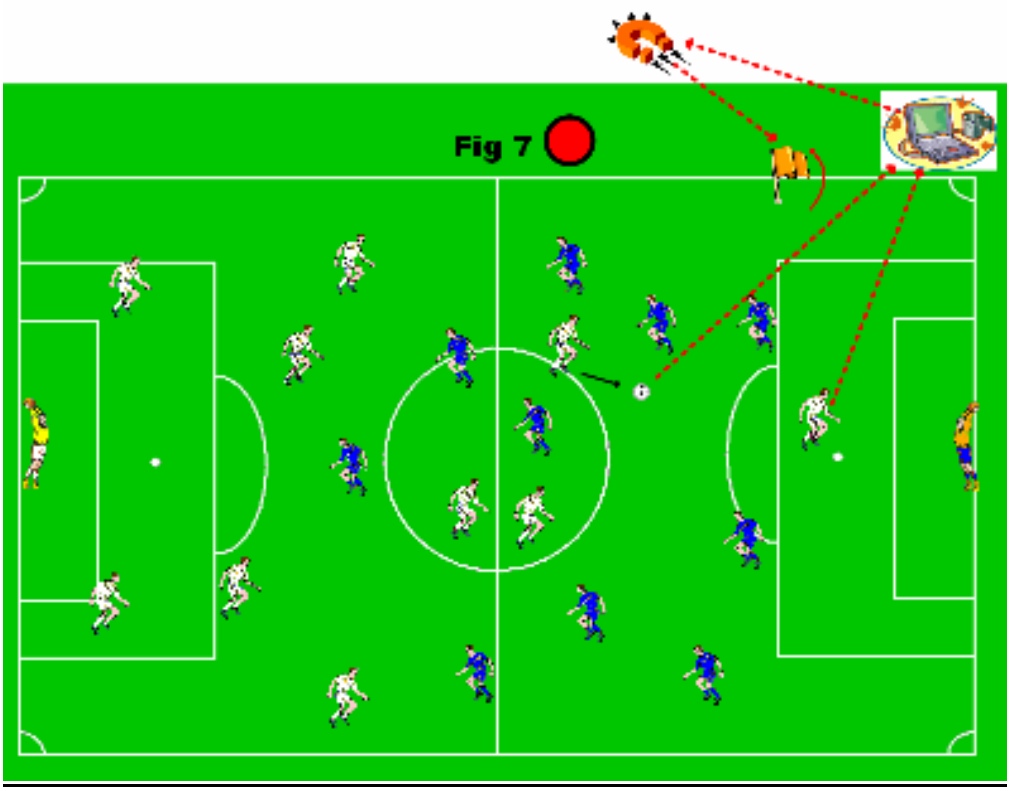
5. As the ball is passed forward by the White team, the White team attacker moves forward again into an offside position. Condition changes to “orange” again *(see Fig 5*).



6. The ball is played forward to the White attacker while he is in an offside position. Condition changes to “red” *(see Fig 6*). Condition “red” is indicated regardless of whether the White attacker receives the ball in an offside or subsequently onside position; the trigger is the moment the ball is played forward while the White player is offside.



7. The condition “red” is instantly transmitted by the control unit to the directional magnet. The magnet is instantly activated and ascertains the assistant referee’s position. It sends a magnetic pulse to the assistant referee’s flag, causing it to rise spontaneously without the need for the assistant to consciously raise it; the pulse is directionally accurate to one millimetre. The assistant maintains the raised flag until the referee notices and gives the offside. *(see Fig 7*)



Development

This system has been tested both in controlled laboratory conditions using Subbuteo players, and also in five games in a local Sunday League. The Institute is seeking funding and permission to develop the system further with the ultimate aim of it being incorporated into all professional football games in the UK, and of it being spread around the world, becoming the *de facto* method for ensuring accurate offside decisions. While the costs of the prototype are relatively high, we expect the overall costs to fall once the system is taken up by professional clubs.

Conclusion

The Institute is committed to the development of the Offside Detection Device. we believe that it will work for the benefit of football as a whole, ensuring correct offside decisions, eliminating the bad feeling and lack of confidence in officials and ensuring that the speed of the game is never too much for the officials to deal with.

Recommendation

We would like all interested parties to work with us to develop this device and install it at all the grounds in one of the lower English leagues. After a full season of testing, it can be rolled out to the higher leagues and its quality can be assured by the failure of any television football pundits to find any instance of the system failing.

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