

THE CONVERSATION



Speed networking: how to win Euro 2016

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Reigning World Cup winners Germany will prove hard to beat at this year's European football championships. Reuters/Darren Staples

Paul Salmon

Professor, Human Factors, University of the Sunshine Coast

Nicholas Stevens

Lecturer, Regional and Urban Planning, University of the Sunshine Coast

Scott McLean

Football Research Student, University of the Sunshine Coast

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Later this week, host nation France will face Romania in the opening game of the Euro 2016 football championships. Over the following four weeks, 24 nations will attempt to dethrone Spain and take home the coveted Henri Delaunay Trophy.

Refreshingly, the Euros have a history of turning up the unexpected. Surprise package Denmark won in 1992; the unfancied Greeks took the spoils in 2004. Reigning champions Spain have bucked this trend, though, winning the last two tournaments via their possession-dominating tika-taka approach.

Now the squads have been announced, attention has turned to what country will win and how teams should play to optimise their chances. Based on a new way of looking at how teams create goals, we think we have some pointers. They are based on a social network analysis of the 171 goals scored during the 2014 World Cup.

Why a social network analysis?

Social network analysis is used to understand network structures via description, visualisation and statistical analysis. It involves looking at people and the connections between them.

In recent times, it has been used to examine all manner of issues – ranging from terrorism

and serial killers to emergency response and social structures.

Our analysis was driven by the fact we see significant gaps in the current methods of assessing the performance of football teams.

In the case of **passing**, we felt there is much more of interest than just a team's share of possession and players' successfully completed pass rates. Instead, we were interested in the "network" of passes that lead to goals, the contribution to that network of different players, and the network's speed, shape, size and origin.

We believe adopting the right kind of passing networks is one of the secrets to winning games of football. By viewing players and the passes between them as a "social network", we can understand and interrogate these networks in detail.

Small, quick networks are key

We transformed each of the goals from the 2014 World Cup into a network comprising players and the passing connections between them. The World-Cup-winning goal is presented in the form of a network below. The circular numbered nodes represent players. The connections between the nodes represent passes.



Supplied

Mario Gotze's winning goal in the 2014 World Cup final.

Once constructed, the networks were analysed using various network analysis metrics. The findings are compelling:

the passing networks that produced a goal were small. The average "size" of the networks was three-and-a-half passes (including the strike on goal) and around four players;

the goalscoring networks had a short lifespan. The average time from gaining possession to scoring a goal was just under nine seconds; and

around 80% of the goals were created through "chain" networks; that is, player A would pass to player B who in turn would pass to player C and so on. They rarely involved one player giving and receiving the ball multiple times, and rarely involved many different players.

The message here is goals emerge when teams develop small and rapid passing networks comprising only a few players.

Next, we looked at the differences between the passing networks associated with successful (finalists and semi-finalists – Germany, Brazil, Argentina and the Netherlands) and unsuccessful teams (those knocked out in the first round).

A notable difference was that when the successful teams scored goals, the passing networks were on average almost three seconds shorter than the unsuccessful teams' networks. They were also smaller; they contained on average fewer passes and fewer players. The longer a network continues, the less likely it is to result in a goal.

Finally, we looked at the key players for each team. Through network analysis metrics it is possible to identify key nodes based on their connectedness (or, in this case, delivery and

receipt of passes) within the network.

For the four finalists, this identified **Neymar** (Brazil), **Lionel Messi** (Argentina) and **Thomas Muller** (Germany) as the key players. The Netherlands had more of a spread of important contributors to their networks.

Lessons for Euro 2016

A key implication of our findings is that, irrespective of playing style, teams that are able to build rapid and direct attacks based on only a few passes will likely be successful.

In tactical terms this could involve pressing high up the pitch when not in possession, attempting to turn over possession, and then mounting rapid and direct attacks on goal. "Speed networking" should be the tactic of choice.

Also, teams will need a clever attacking player(s) with the ability to initiate or finish off rapid attacks – exactly as Neymar, Messi and Muller did during the World Cup.

Defensively, the key lies in countering these rapid attacks by having a fast transition into defence when losing the ball in dangerous areas. Allowing the opposition longer periods of possession can also be OK so long as their networks are broken up eventually and possession is restored.

The inevitable question to be posed is this: who, based on this view, will win Euro 2016? The findings suggest teams with pace, power and a high-pressing style will likely enjoy success. The smart money then would be on **Germany**, **Portugal** or **France**. And for a surprise package, how about Roy Hodgson's youthful and pacy **England**?

Defending champions **Spain** will be dangerous, but they may have to change their style to make it three in a row.



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