

# PLAYING STYLE INTERACTIONS AND OPTIMISING PLAYER RELATIONSHIPS

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## AIMS

1. Use event statistics to identify playing styles within positions and classify each player into a playing style.
2. Examine relationships between playing styles by exploring how one style performs in conjunction with another.

## METHOD

Playing Style Generation & Classification:

- **Principle Components Analysis (PCA)** is used to reduce the number of event variables into a style of play and to provide a weighting of how much a player fits into that style.

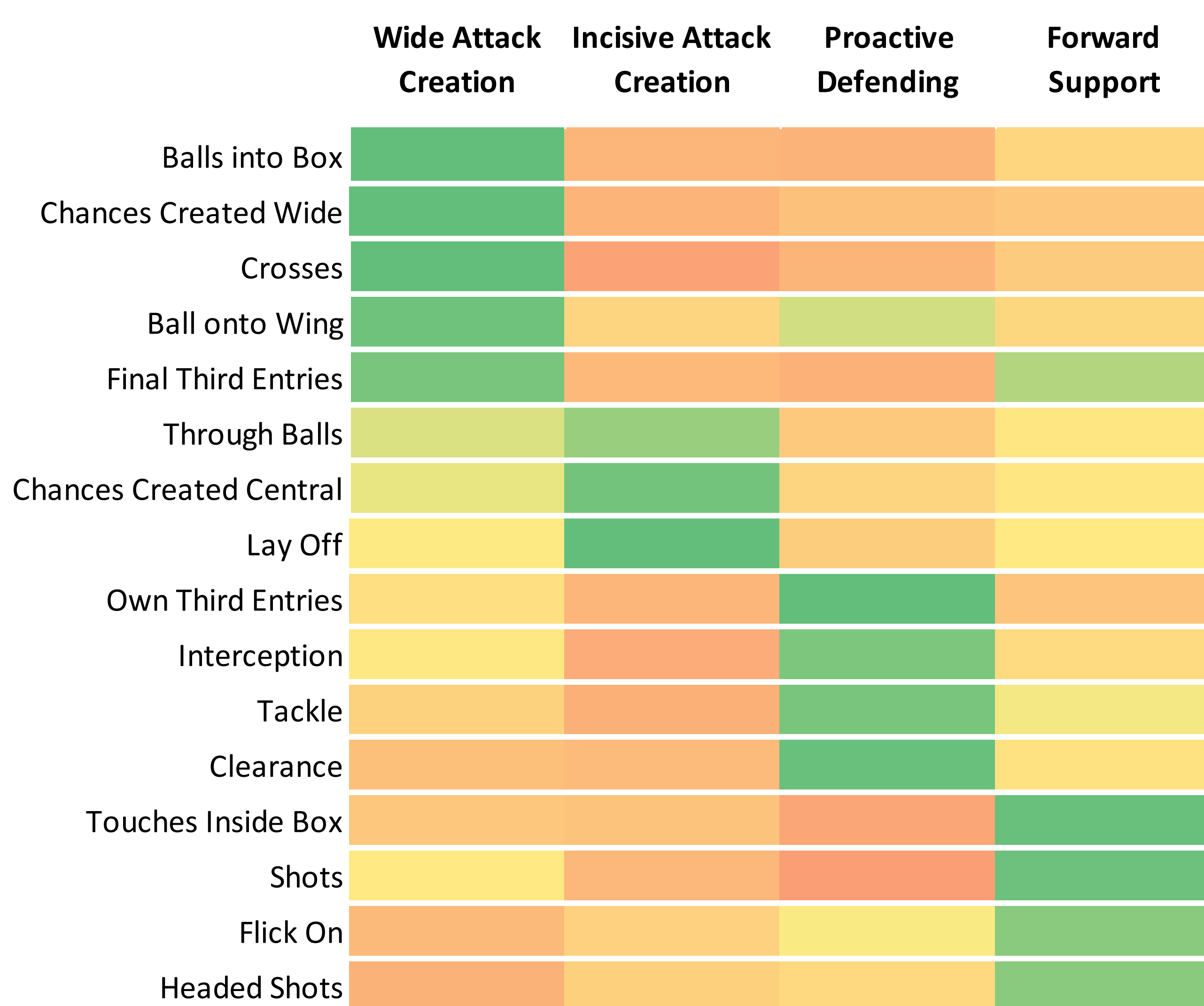
Playing Style Synergies:

- **Linear Regression** is used to identify how a player's ability to perform a particular playing style varies based on their teammate's style.

## PLAYING STYLE GENERATION

- Possession adjusted event data for each position is entered into separate PCAs.
- Playing styles for each position are defined based on groups of highly related features.

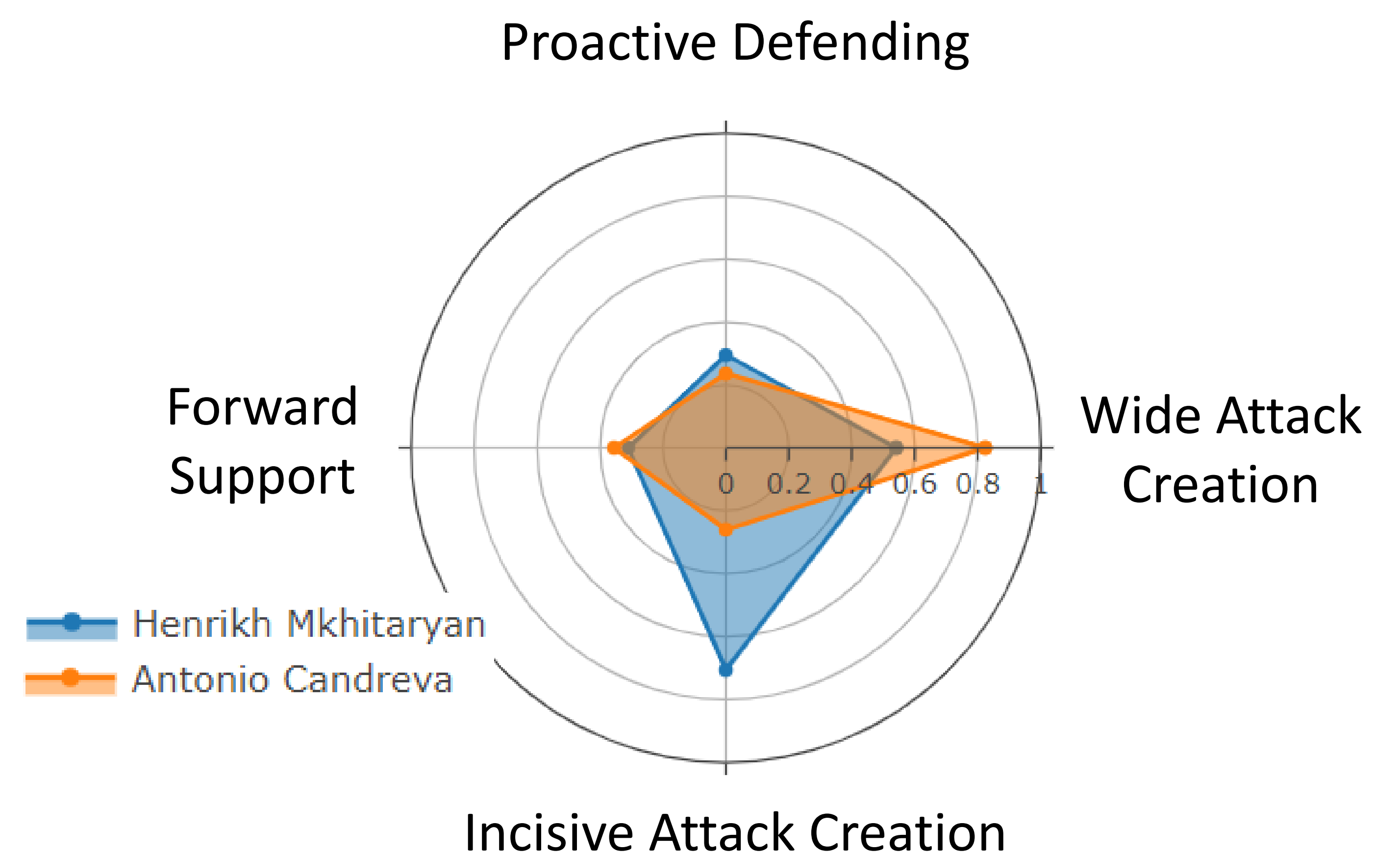
### Example: Attacking Midfield



## PLAYING STYLE CLASSIFICATION

- Each player in that position is given a weighting of how much they fit a particular playing style.

### Example: Mkhitarayan vs. Candreva



## PLAYING STYLE INTERACTIONS

By comparing a player's individual game stats to their season average, we can identify the effect their teammate's playing styles has on their own performance.

The table to the right shows the percentage increase in an Attacking Midfielder with a playing style of 'Wide Attack Creation'.

E.g. When playing with a Front Foot Defender their number of crosses decreases by 3% but the number of chances created from wide positions increases by 15%.

Teammate Playing Style

### Example: Wide Attack Creation (Attacking Midfielder)

	Ball into Box	Chances Created Wide	Crosses	Ball onto Wing	Final Third Entries	Overall Weighted Effect
CB - Front Foot Defender	-3%	15%	-3%	-8%	-3%	-1%
CB - Distributor	-5%	7%	-4%	-9%	-4%	-1%
DM - Attacking Involvement	6%	6%	11%	5%	5%	6%
DM - Proactive Defending	1%	22%	2%	2%	-1%	5%
Forward - Complete Striker	3%	2%	7%	4%	1%	2%
Forward - Target Man	4%	-2%	2%	1%	1%	0%



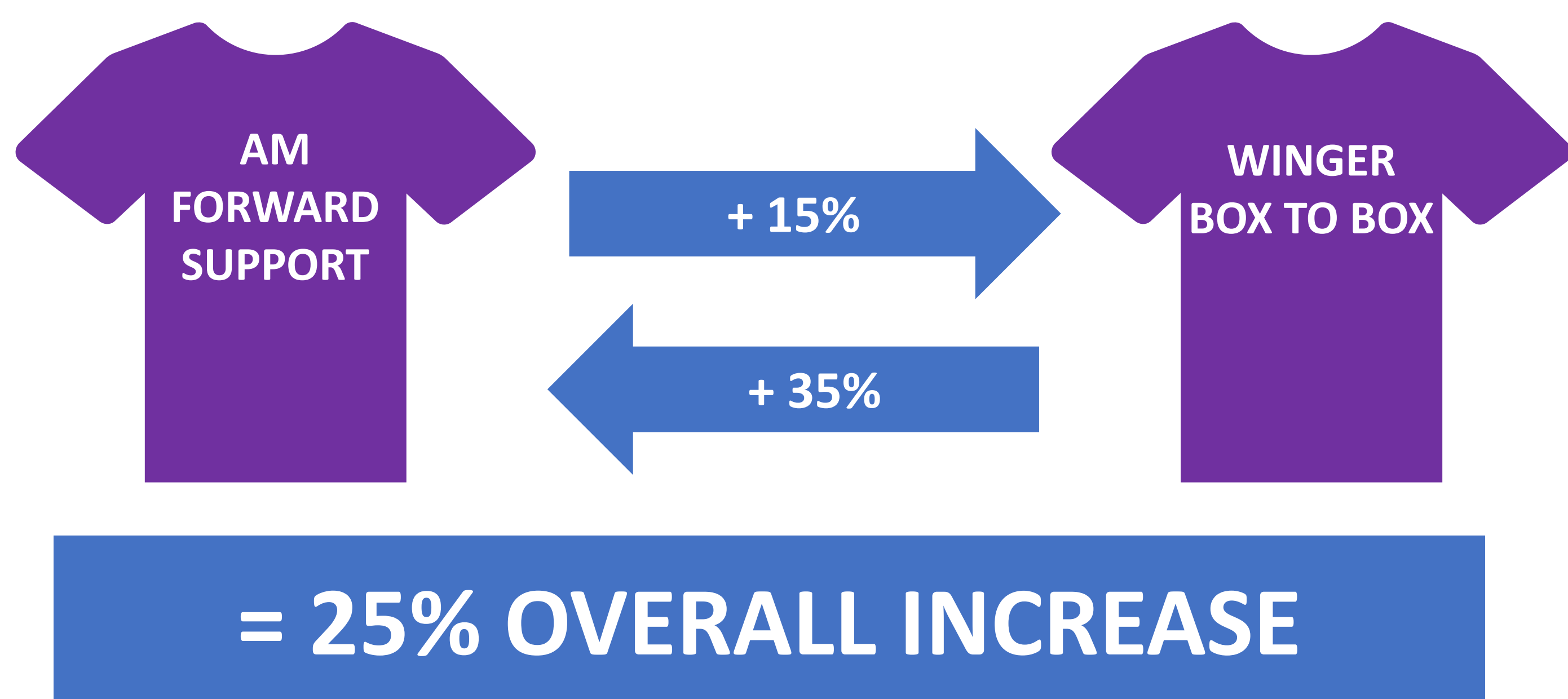
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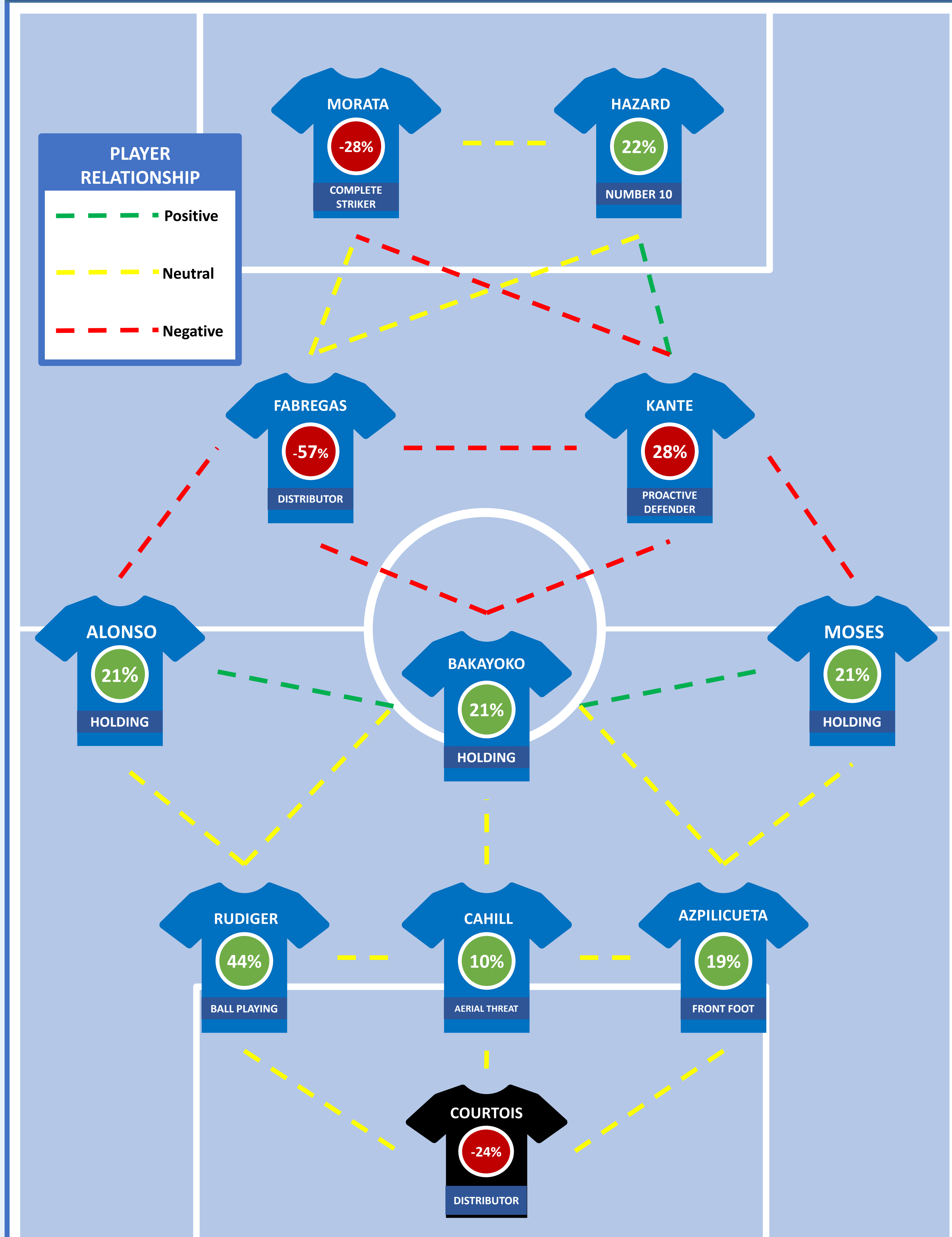
## PLAYING STYLE RELATIONSHIPS

	Forward - Hold Up	Forward - Target Man	Forward - Complete Striker	Forward - Number 10	Winger - Box to Box	Winger - Incisive Attacking	Winger - Wide Attack Creation	AM - Proactive Defending	AM - Incisive Attack Creation	AM - Forward Support
AM - Wide Attack Creation	-9%	0%	-1%	2%	-8%	5%	11%	-7%	-25%	-2%
AM - Forward Support	-18%	-18%	-9%	-2%	25%	-14%	-15%	0%	-5%	8%
AM - Incisive Attack Creation	16%	-16%	18%	1%	9%	-26%	-15%	2%	-31%	
AM - Proactive Defending	19%	-2%	2%	2%	-6%	-15%	-2%	-13%		
Winger - Wide Attack Creation	9%	-6%	-6%	-10%	5%	-10%	-4%			
Winger - Incisive Attacking	-20%	3%	9%	3%	-7%	10%				
Winger - Box to Box	2%	7%	-4%	-8%	17%					
Forward - Number 10	-8%	-4%	-3%	-13%						
Forward - Complete Striker	-9%	-1%	-5%							
Forward - Target Man	-8%	0%								
Forward - Hold Up	72%									

The table above shows examples of the overall relationship effect between pairs of playing styles: E.g.



## EXAMPLE LINE-UP



- The effects of teammate relationships within the Chelsea side vs. Brighton and Hove Albion 26<sup>th</sup> December 2017.
- The number on a player's shirt indicates the overall influence their teammates have on their performance.

## APPLICATIONS

- Allows coaches to understand if the combination of playing styles within their team boosts or hinders performance, allowing them to assess their options and choose the best combinations of players in order to optimise performance.
- Helps prioritise transfer targets, as you would know a target's playing style and therefore can understand if they will create new relationships within the team or upset existing ones. The same principle can be applied when deciding whether to accept a transfer offer for one of your existing players.
- To extend the research it would first be beneficial to investigate how to remove team effects to ensure it is only interactions with playing styles affecting the results. From here the research could be extended to look at the effect a certain playing style has on the performance of opposing teams players. This would allow analysts to identify if a particular team selection could prevent an opponents player from performing their role or alternatively warn them about the opposing teams' relationships that are likely to hinder their performance.