

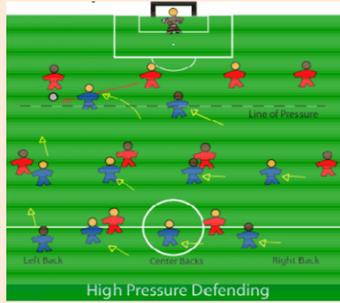
Exploring Pressure in Football

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Definition of pressure in literature?

Pressure = closing down the opponent or other team on defense
Closing down = putting pressure on an offensive player so they have no space or time to operate



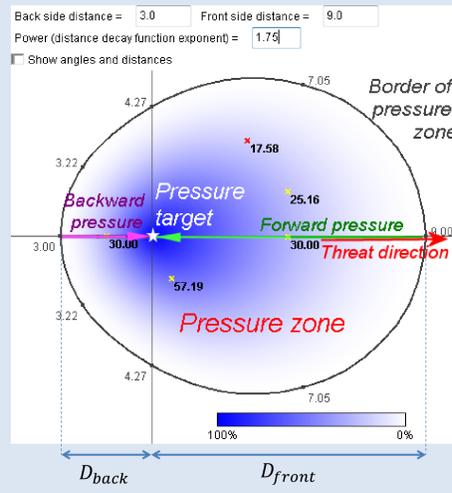
Goals of low pressure defending:

- Frustrate the opposition into making mistakes
- Put as many defenders behind the ball as possible
- Every player has to defend
- Given the limited space, it will be difficult for a team to score

Goals of high pressure defending:

- Win the ball as close to your opponent's goal as possible
- Win the ball as far from your goal as possible
- Pressure the opposition as they receive the ball in their own half

How to define, detect and measure pressure?



Pressure target: the ball or a player of the ball possessing team

Threat direction: towards the defended goal or towards the ball (if not possessed)

Pressure zone: the space from within which a defender can obstruct the movement of the pressure target in the threat direction. Zone boundary:

$$L = D_{back} + \frac{(D_{front} - D_{back})(z^3 + 0.3z)}{1.3};$$

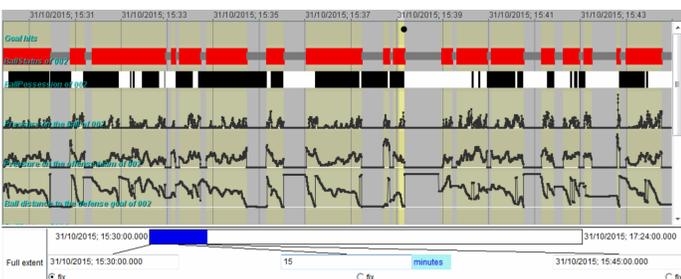
$$z = (1 - \cos \theta) / 2$$

The amount of the pressure:

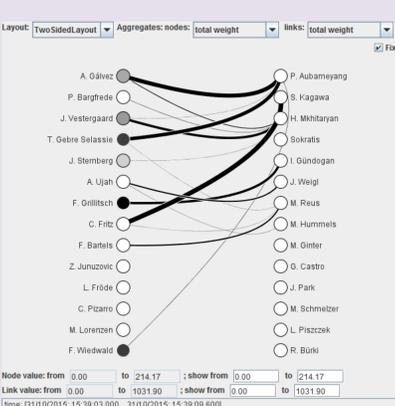
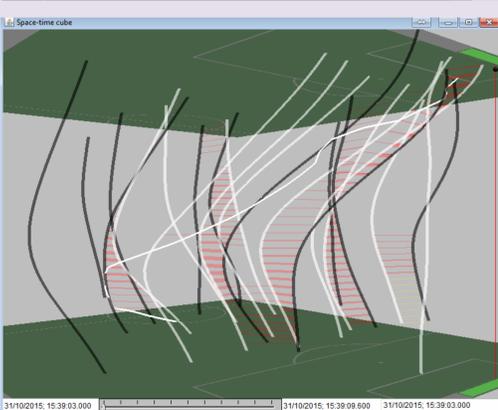
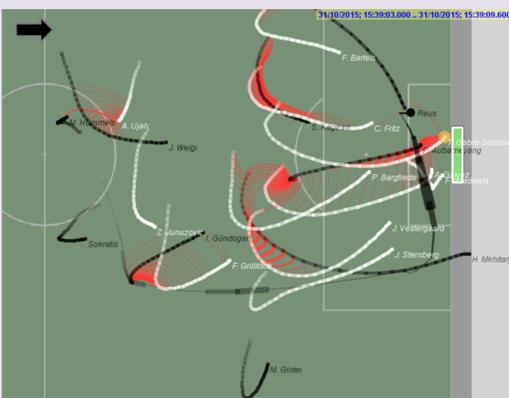
$$p = (1 - d/L)^q \cdot 100\%$$

p depends on the distance to the pressure target d and the angle to the threat direction θ

Interactive display of time series and events

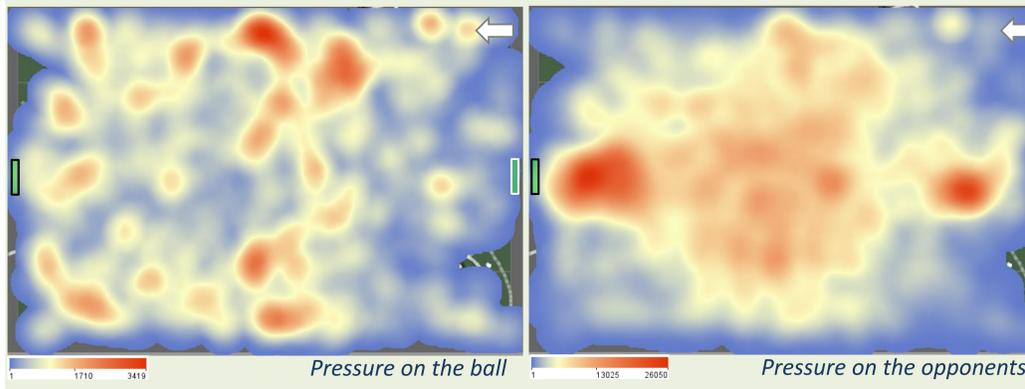


a) Select individual game episodes to examine and re-play

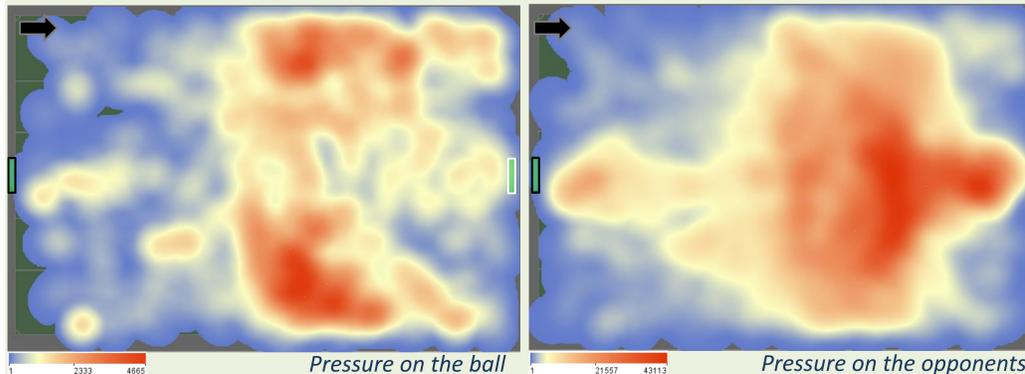


b) Select subsets of disjoint episodes for summarization and analysis of team tactics

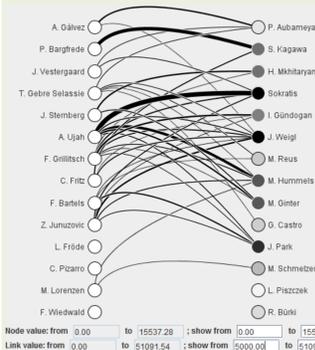
Dortmund's defending tactics



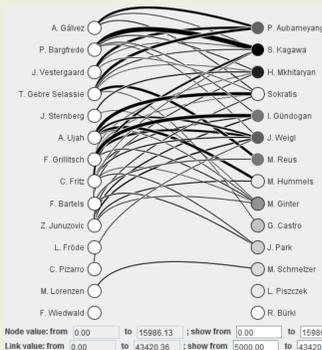
Bremen's defending tactics



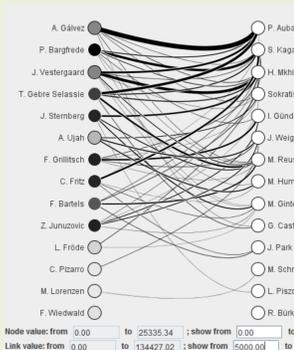
Dortmund's low defending pressure



Dortmund's high defending pressure



Bremen's low defending pressure



Bremen's high defending pressure

