



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Bundesamt für Sport BASPO

EHSM

Eidgenössische
Hochschule
für Sport
Magglingen

Digital Transformation of Sports Coaching: The Case of Soccer

Martin Rumo





Sports: the most disrupted of all industries?

PwC's Sports Survey 2017



“Don’t look at us as a sports team; we want to become a global content company”

**James Pallotta,
AS Roma**



“Digital driving Change”

PwC Report on Sport 2016



Growth Sports Analytics Market

- Marketsandmarkets:
 - 2016 → USD 123.7 million
 - 2021 → USD 616.7 million
- MarketWatch Report:
 - CAGR of 43.7%
- Wintergreen Report:
 - 2016 → USD 764.3 million
 - 2023 → USD 15.5 billion



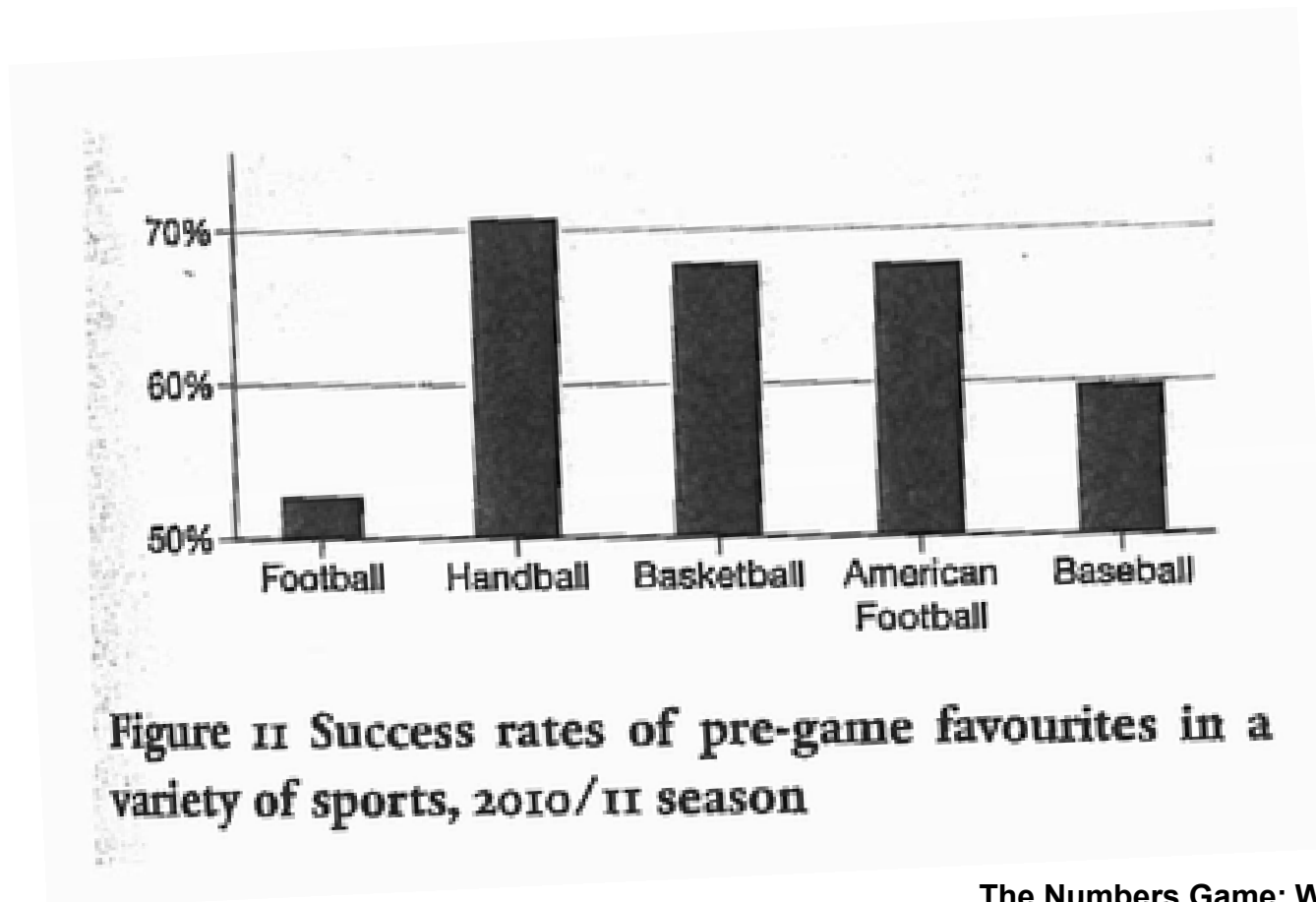
Football

“Le foot est la chose la plus complexe dans l’univers”

— Claude Ryf, Swiss National Coach U18



Skill vs. Luck



The Numbers Game: Why Everything You Know About Football is Wrong
by Chris Anderson (Author), David Sally



Poker Is Not Gambling, Says Federal Judge

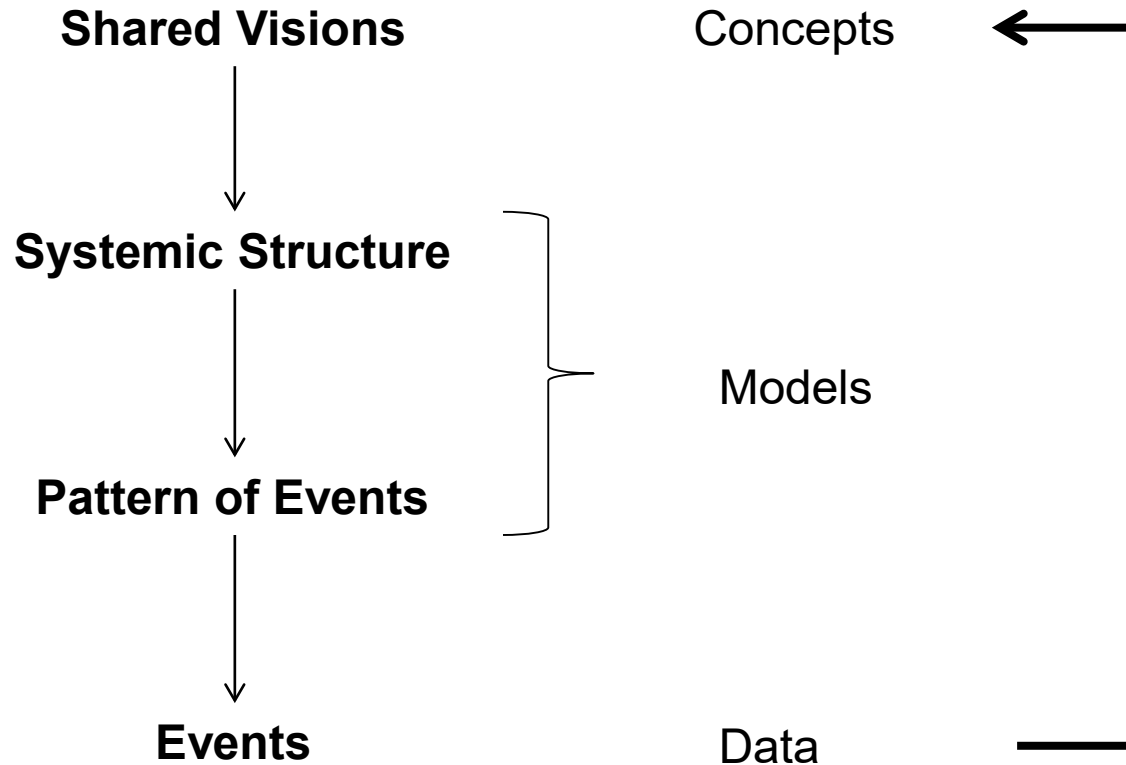
“Why do you think the same five guys make it to the final table of the World Series of Poker every year? What are they, the luckiest guys in Las Vegas?”

— Mike McDermott (Matt Damon in the 1998 film “Rounders”)

DATA: *The Role of Skill versus Luck in Poker: Evidence from the World Series of Poker*, Steven D. Levitt and Thomas J. Miles , April 2011



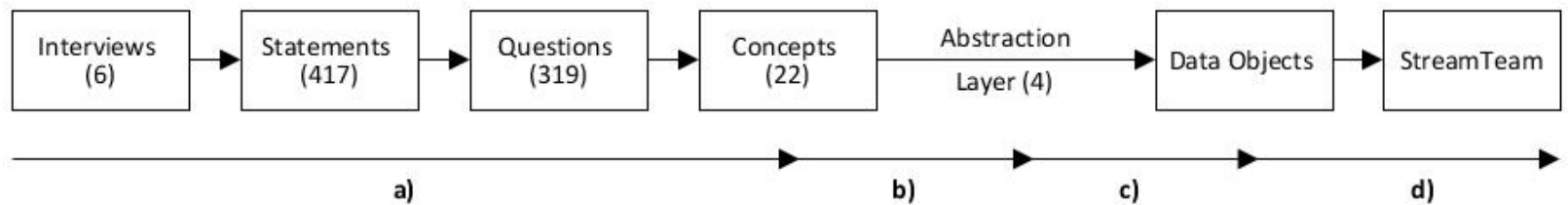
Levels of Description





How to assess Coaching Concepts?

- a) Performance Factors Assessment
- b) Performance Modeling
- c) Data Modeling
- d) System Implementation





Method

- Semi-structured interviews with UEFA Pro License coaches (n=6)
- Record and transcription of interviews
- 417 statements and questions → categorization
- 260 statements , 59 questions remaining (total n=319)
- Transformation of statements to questions
- 319 questions → “extraction” of 22 concepts

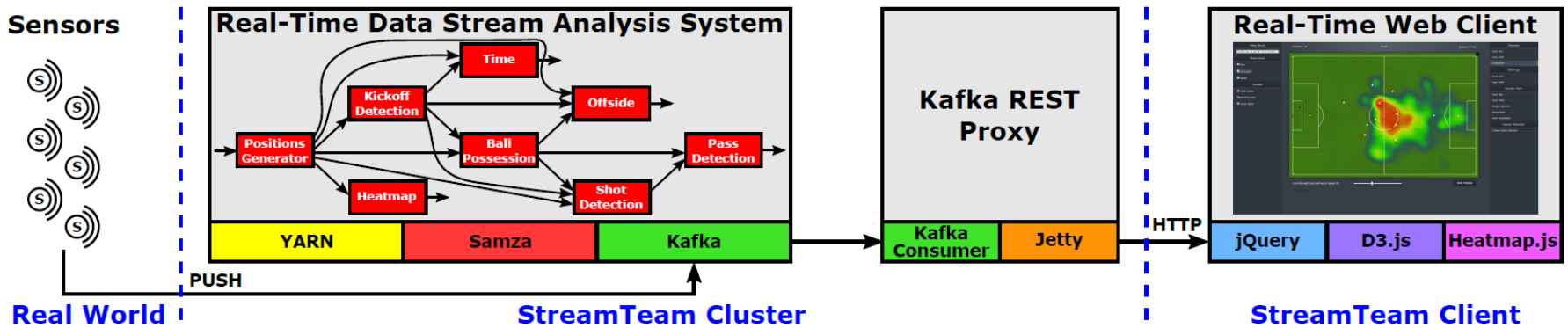


Example

- Statement: “The defending team decides where to start a pressure situation.”
- Question: “Where does the defending team start a pressure situation?”
- Concept: Pressure

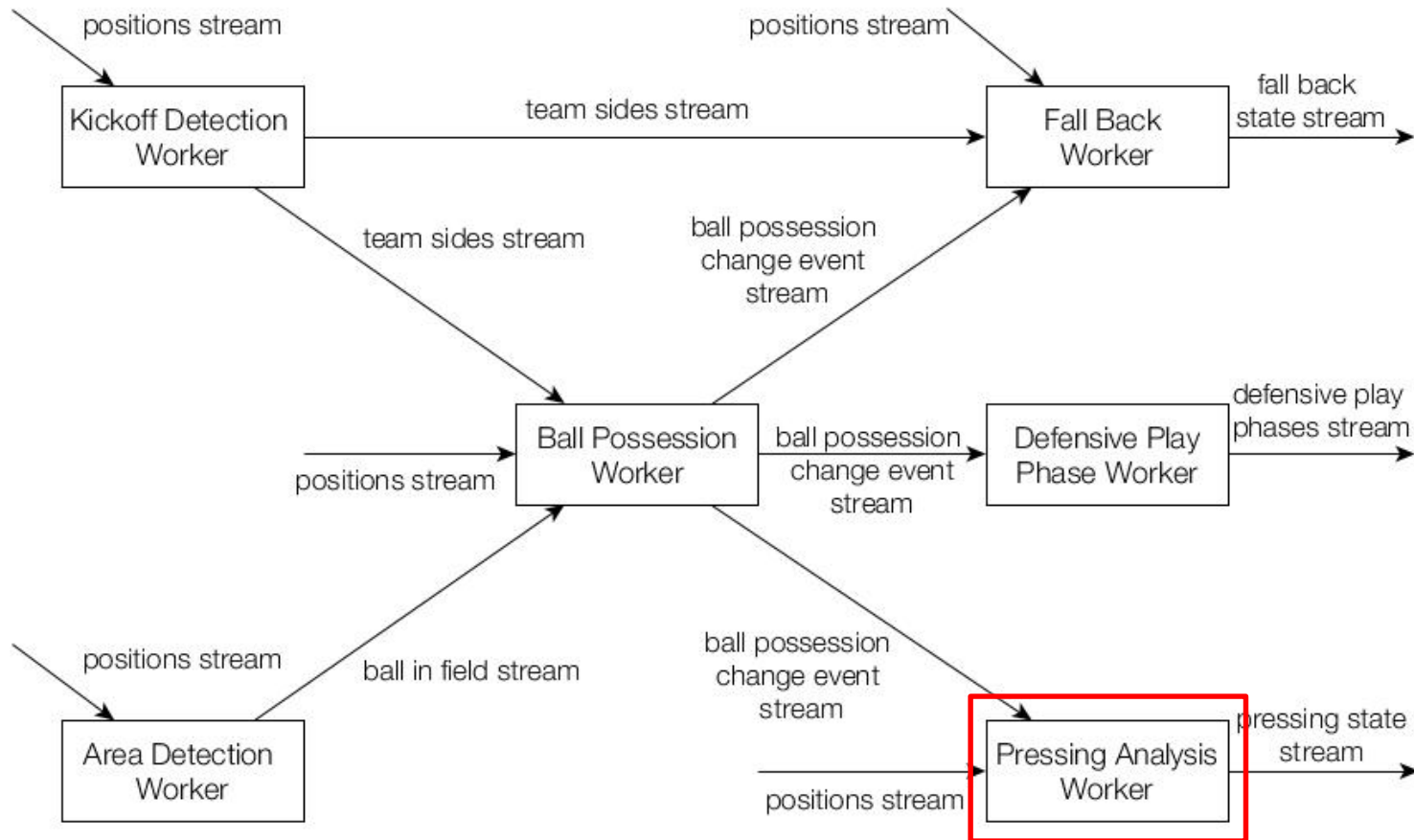


Implementation: Stream Processing





Divide and Conquer



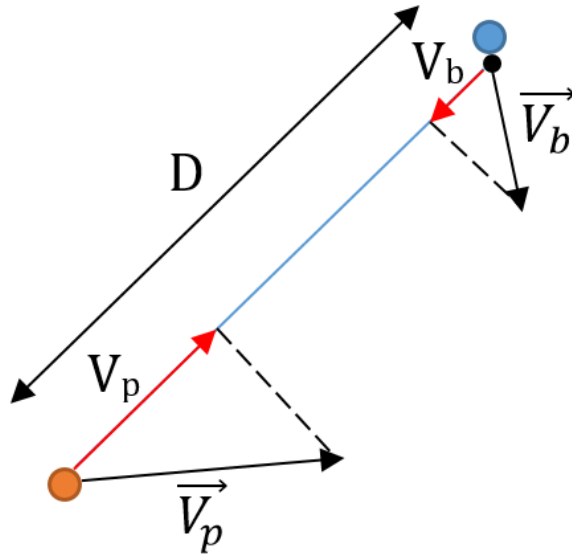


Beobachtung





Pressing Index



$$PI = \sum_i PI_i$$

$$PI_i = \frac{V_p + V_b}{D}$$

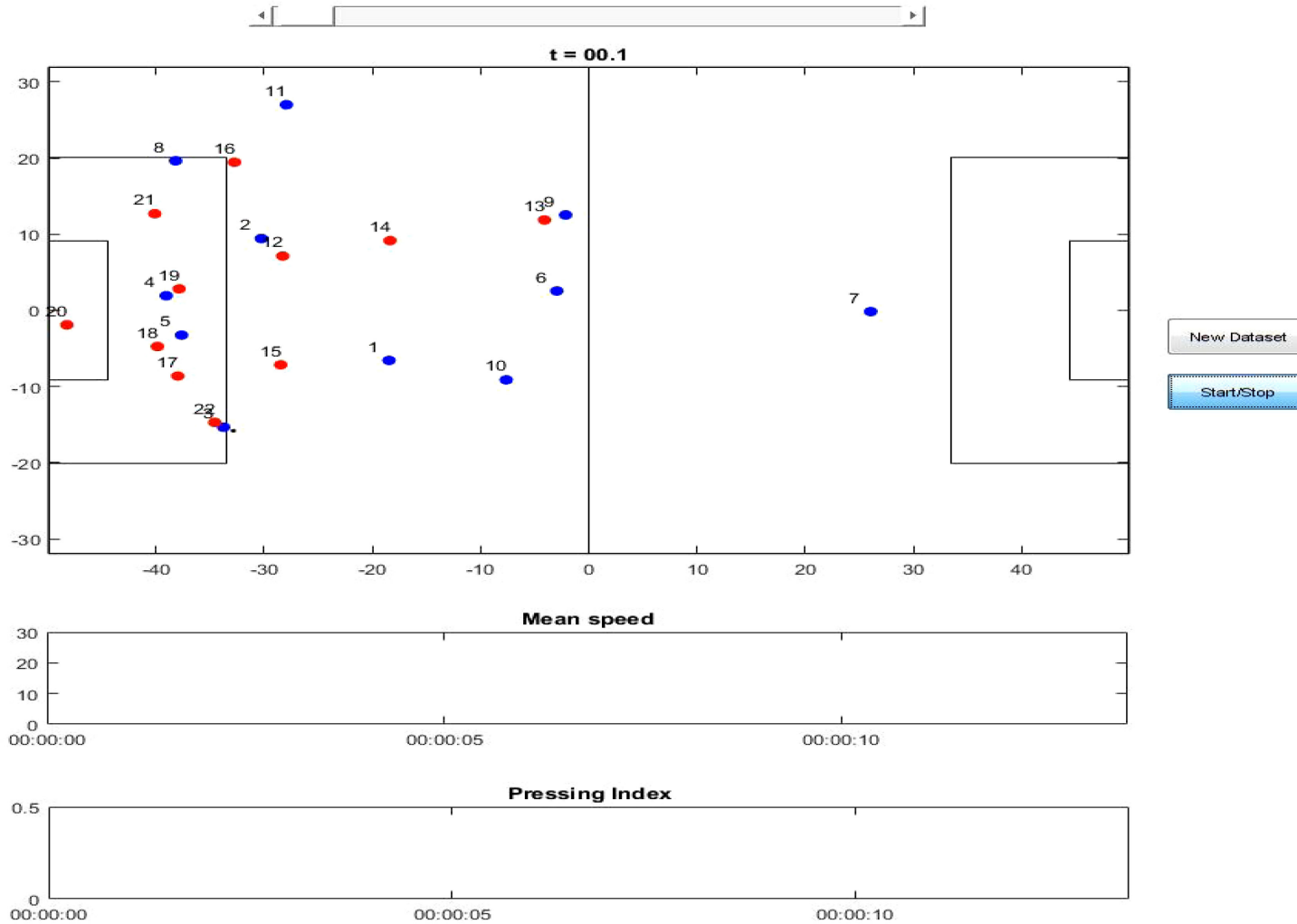
D : Distance player-ball

V_p : Player's speed in direction of the ball

V_b : Ball's speed in direction of the player



Pressing Index





Take Home Messages

- Sport Analytics Market is rapidly growing
- Sport data still face multiple challenges due to complexities of sports games
- The data still does not represent underlying structures and shared visions
- We showed a method to assess concepts, model them and implement them in a modular real-time stream processing architecture.



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Federal Office of Sport FOSPO

SFISM

Swiss Federal
Institute
of Sport
Magglingen

Thank you for your attention



Bern University
of Applied Sciences