

# Semantic Web Technologien: FIFA's Fußball-Weltmeisterschaft 2014 in Brasilien bekommt eine semantische Unterstützung.

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**Abstract.** Große Sportereignisse haben schon immer große Menschenmaßen begeistert. So auch die Events die die Disziplin Fußball betreffen. Dieses Paper beschreibt ein Projekt, das sich als Ziel die Vorstellung der Ereignisse der diesjährigen Fußballweltmeisterschaft gesetzt hat. Der Fokus dieser Anwendung liegt auf der Aktualität der präsentierten Daten sowie einer auf die Mobilien-Endgeräte angepassten Repräsentation. Für die Vielfalt der präsentierten Daten sowie deren Richtigkeit sorgte eine Informationssynthese aus mehreren Quellen. Um die Informationen weitestgehend für automatische Weiterverarbeitung vorzubereiten wurden alle Daten um semantische Bedeutung aus gängigen Sport-Ontologien ergänzt.

## 1 Pitch

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\* Herzlichen Dank, dass Du das Projekt im allein Gang auf die Beine gestellt hast und von uns nur verlangt hast, dass wir einmal die Hose runter lassen :-).

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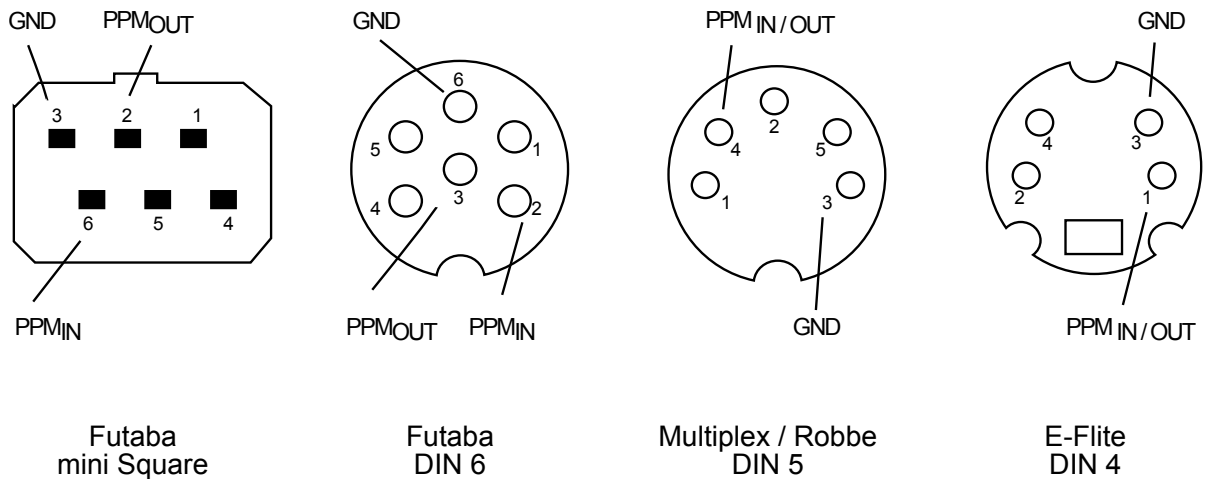
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**Fig. 1.** One kernel at  $x_s$  (*dotted kernel*) or two kernels at  $x_i$  and  $x_j$  (*left and right*) lead to the same summed estimate at  $x_s$ . This shows a figure consisting of different types of lines. Elements of the figure described in the caption should be set in italics, in parentheses, as shown in this sample caption.

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$$\psi(u) = \int_o^T \left[ \frac{1}{2} (A_o^{-1}u, u) + N^*(-u) \right] dt . \quad (1)$$

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### 3.4 Program Code

Program listings or program commands in the text are normally set in typewriter font, e.g., CMTT10 or Courier.

*Example of a Computer Program*

```
program Inflation (Output)
  {Assuming annual inflation rates of 7%, 8%, and 10%,...
   years};
  const
    MaxYears = 10;
  var
    Year: 0..MaxYears;
    Factor1, Factor2, Factor3: Real;
  begin
```

---

<sup>1</sup> The footnote numeral is set flush left and the text follows with the usual word spacing.

```

Year := 0;
Factor1 := 1.0; Factor2 := 1.0; Factor3 := 1.0;
WriteLn('Year  7% 8% 10%'); WriteLn;
repeat
  Year := Year + 1;
  Factor1 := Factor1 * 1.07;
  Factor2 := Factor2 * 1.08;
  Factor3 := Factor3 * 1.10;
  WriteLn(Year:5,Factor1:7:3,Factor2:7:3,Factor3:7:3)
until Year = MaxYears
end.

```

(Example from Jensen K., Wirth N. (1991) Pascal user manual and report. Springer, New York)

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## References

1. BBC ONTOLOGIES,  
Letzte Zugriff: 26. Juni 2014  
<http://www.bbc.co.uk/ontologies>
2. More Football Data Projects,  
Letzte Zugriff: 16. Juli 2014  
<https://github.com/footballdata>
3. jQuery mobile,  
Letzte Zugriff: 26. Mai 2014  
<https://demos.jquerymobile.com/1.4.2/>
4. Semantic Media Mining,  
Letzte Zugriff: 22. Juli 2014  
<https://smm2013.blogspot.de/2012/11/soccer-voc.html>

5. DBpedia,  
Letzte Zugriff: 22. Juli 2014  
<http://http://dbpedia.org>
6. Ruby. Der beste Freund eines Programmierers,  
Letzte Zugriff: 22. Juli 2014  
<https://www.ruby-lang.org/de/>
7. Scraping FIFA World Cup Data,  
Letzte Zugriff: 12. Juli 2014  
<https://github.com/footballdata/fifadata>
8. Open Football,  
Letzte Zugriff: 12. Juli 2014  
<https://github.com/openfootball/world-cup>
9. Football DB,  
Letzte Zugriff: 12. Juli 2014  
<http://footballdb.herokuapp.com/api/v1/>
10. Open Liga DB,  
Letzte Zugriff: 12. Juli 2014  
<http://www.openligadb.de/Sports>
11. World Cup ... in JSON,  
Letzte Zugriff: 12. Juli 2014  
<http://www.http://worldcup.sfg.io/>
12. FIFA com,  
Letzte Zugriff: 12. Juli 2014  
<http://http://www.fifa.com/>

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