
Text Mining Support in Semantic Metadata Extraction

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Overview

- Semantic Metadata
 - Metadata, Semantic Metadata, Ontologies
 - Ontologies, Multilinguality & Multimedia
- Text Mining for Semantic Metadata Extraction
 - Ontology Population from Text
 - Multimedia (Image/Video) Ontology Population
 - Ontology Learning (for Multimedia Analysis)
- Do Semantic Metadata Help?
 - The MuchMore Case

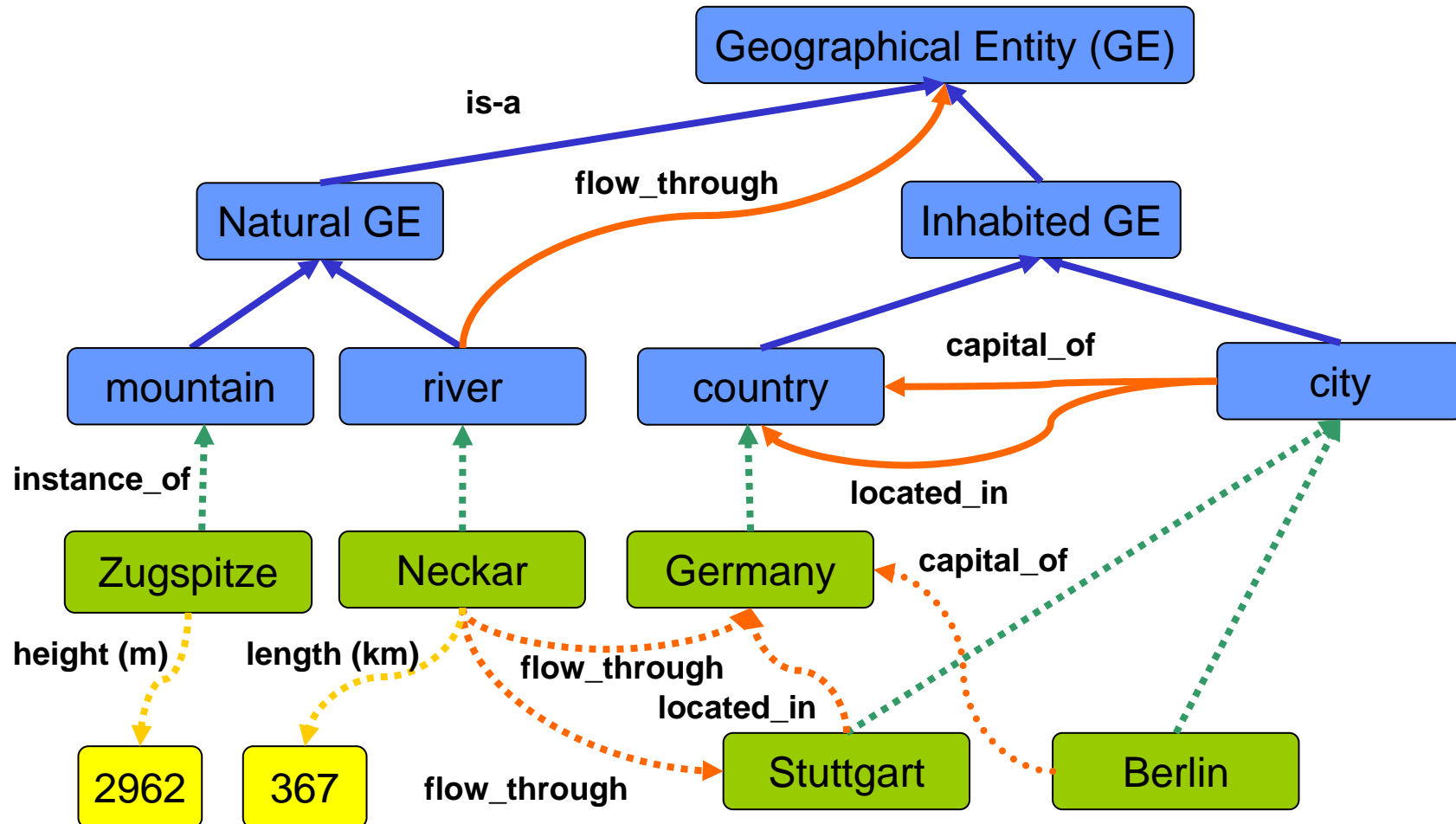
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Metadata, Semantic Metadata, Ontologies

- Metadata
 - author, creation date, etc.
- Semantic Metadata
 - topic, named-entities mentioned, etc.
- Ontologies
 - Organize topics (hierarchy, relations)
 - Organize extracted entities + facts
 - Instantiate entities, facts into a Knowledge Base
 - Access semantic data by queries on the KB

Ontology Example

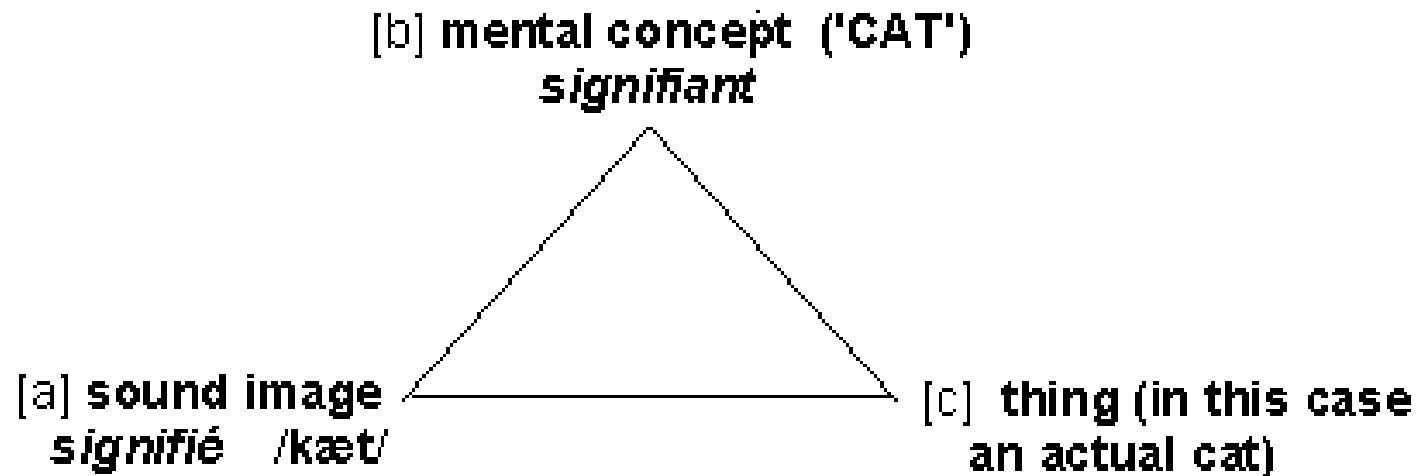


Design: Philipp Cimiano

Ontologies, Multilinguality & Multimedia

“Semiotic Triangle” (Ogden & Richards, 1923) - based on

- Structural Linguistics (de Saussure, 1916)
- philosophical work by Peirce (mostly 19th century)

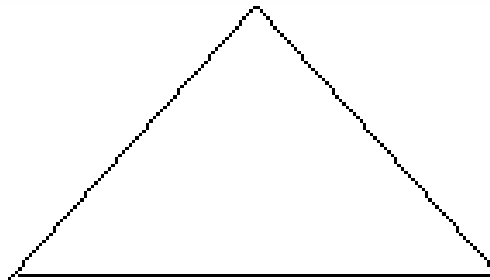


Objects, Concepts & Linguistic Symbols (words)

```
- <rdfs:Class rdf:ID="Goalkeeper">  
  <rdfs:subClassOf rdf:resource="#Player" />  
- <rdfs:subClassOf>  
  - <daml:Restriction daml:mincardinality="1" daml:maxcardinality="n">  
    <daml:onProperty rdf:resource="#agent" />  
    <daml:toClass rdf:resource="#Player_Action" />  
  </daml:Restriction>  
</rdfs:subClassOf>
```

goal keeper (EN)
Torwart (DE)
doelman (NL)

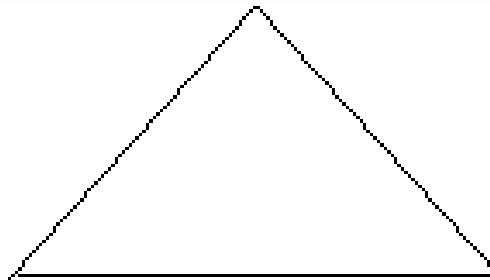
...



goalkeepers
in the world

Objects, Concepts & Visual Symbols (images)

```
- <rdfs:Class rdf:ID="Goalkeeper">  
  <rdfs:subClassOf rdf:resource="#Player" />  
- <rdfs:subClassOf>  
  - <daml:Restriction daml:mincardinality="1" daml:maxcardinality="n">  
    <daml:onProperty rdf:resource="#agent" />  
    <daml:toClass rdf:resource="#Player_Action" />  
  </daml:Restriction>  
</rdfs:subClassOf>
```



goalkeepers
in the world

Linguistic and Visual Features

Linguistic features, e.g. for “goalkeeper”

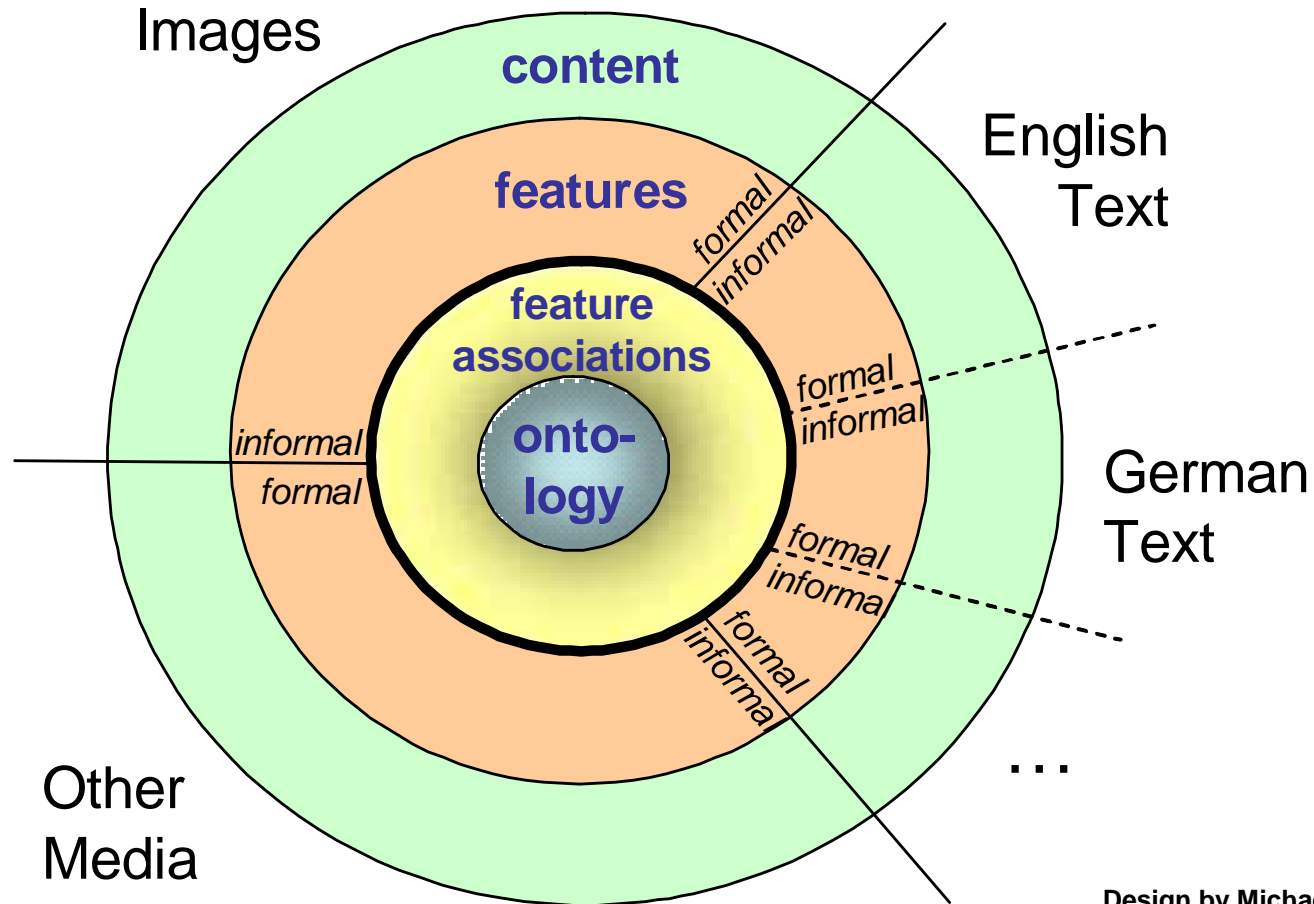
- *Language*
- *Part-of-Speech*
- *Morphology*
- ...

Visual features, e.g. for

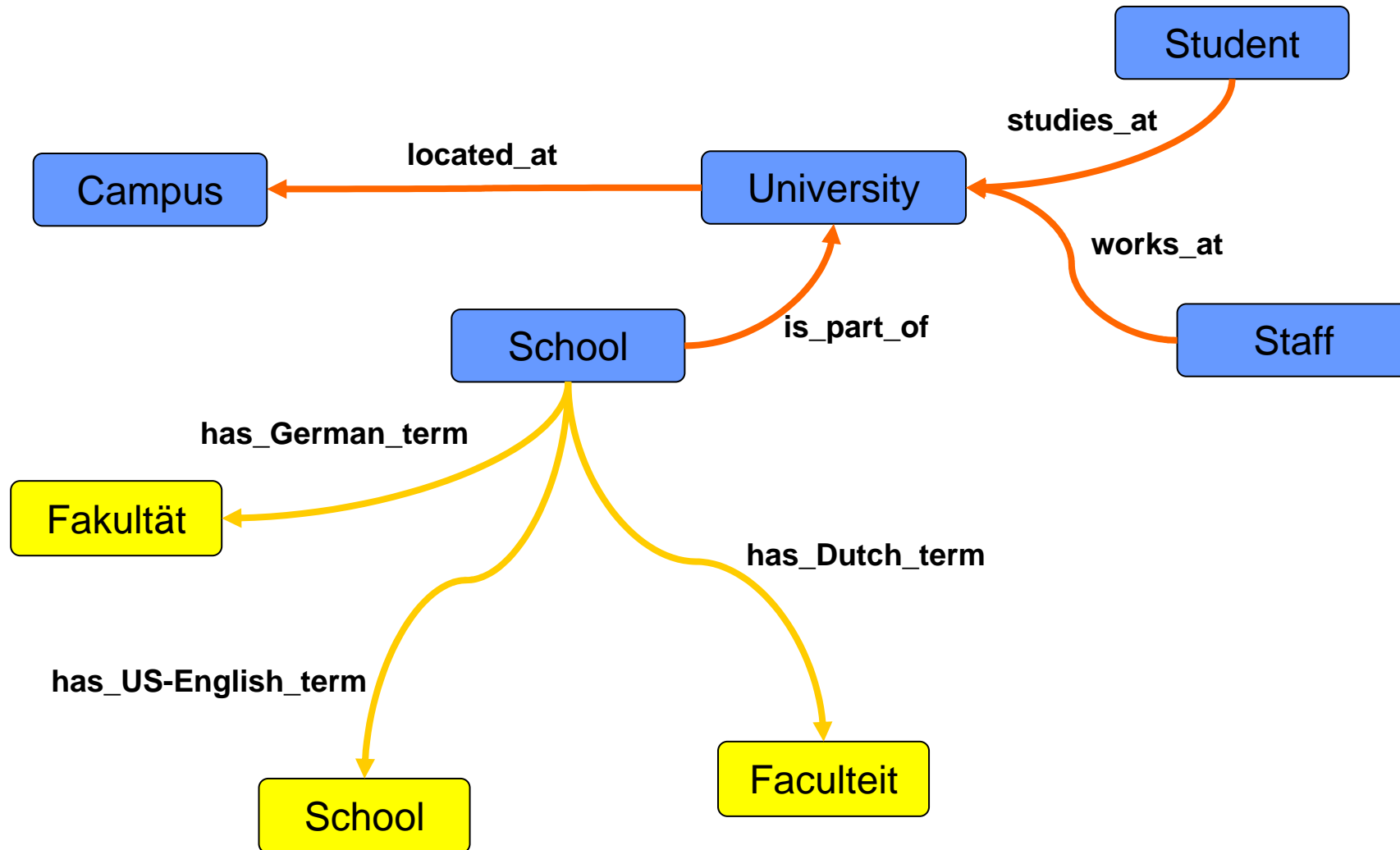
- *Color-Set*
- *Shape*
- *Texture*
- ...



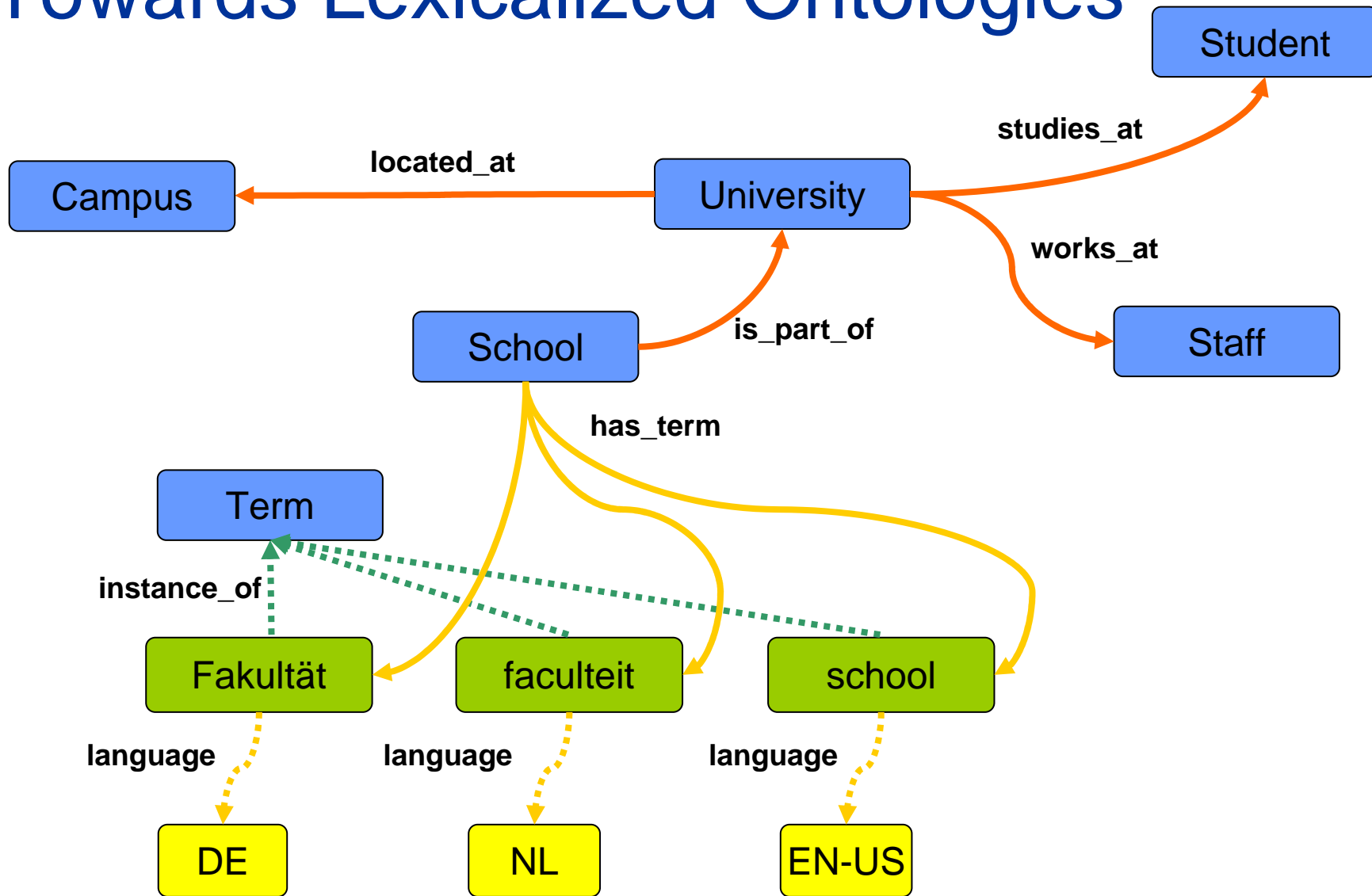
Data (Multimedia Content), Features & Semantic Metadata (Ontology Classes)



Multilinguality in Ontologies (RDF/S)

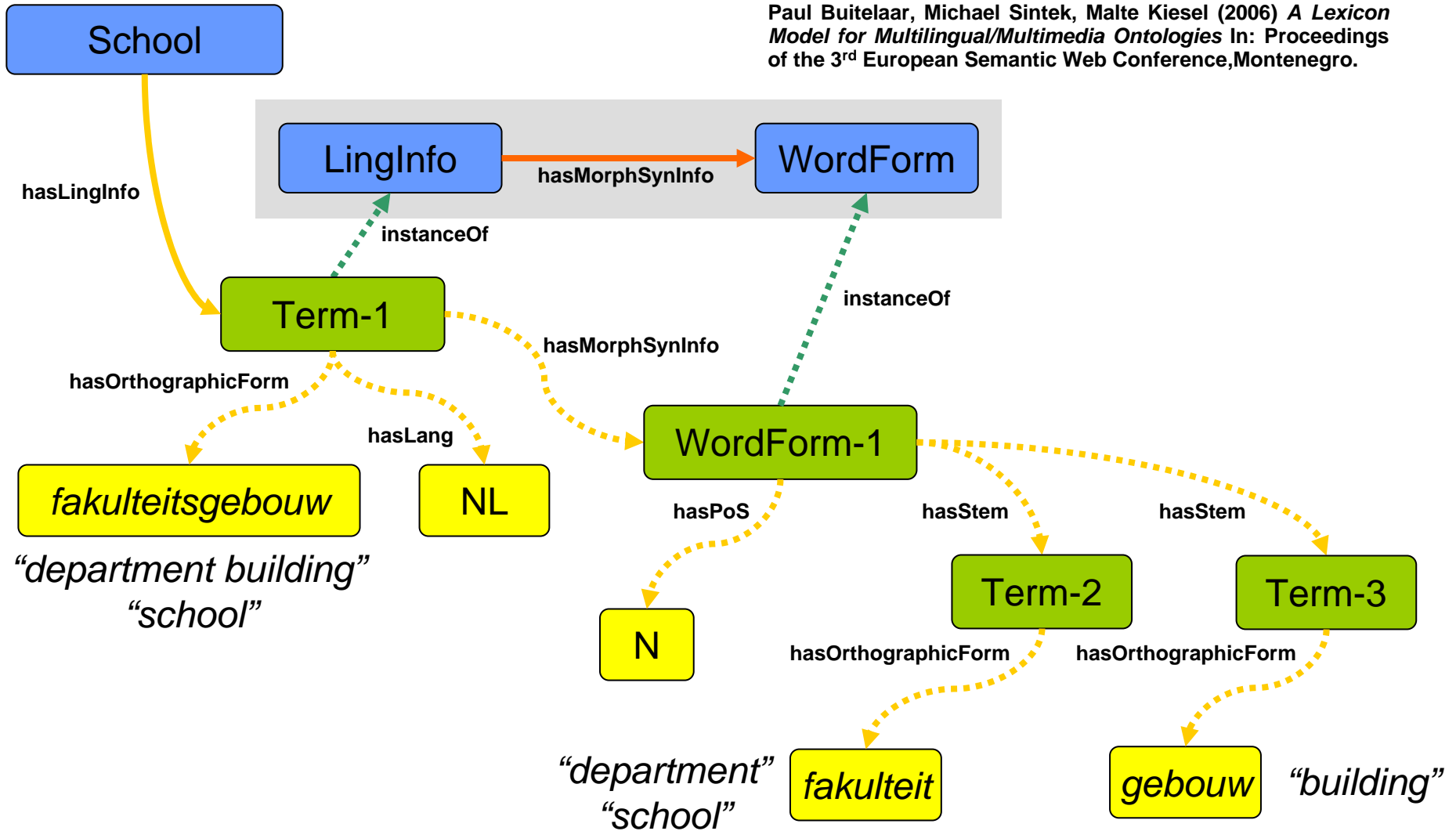


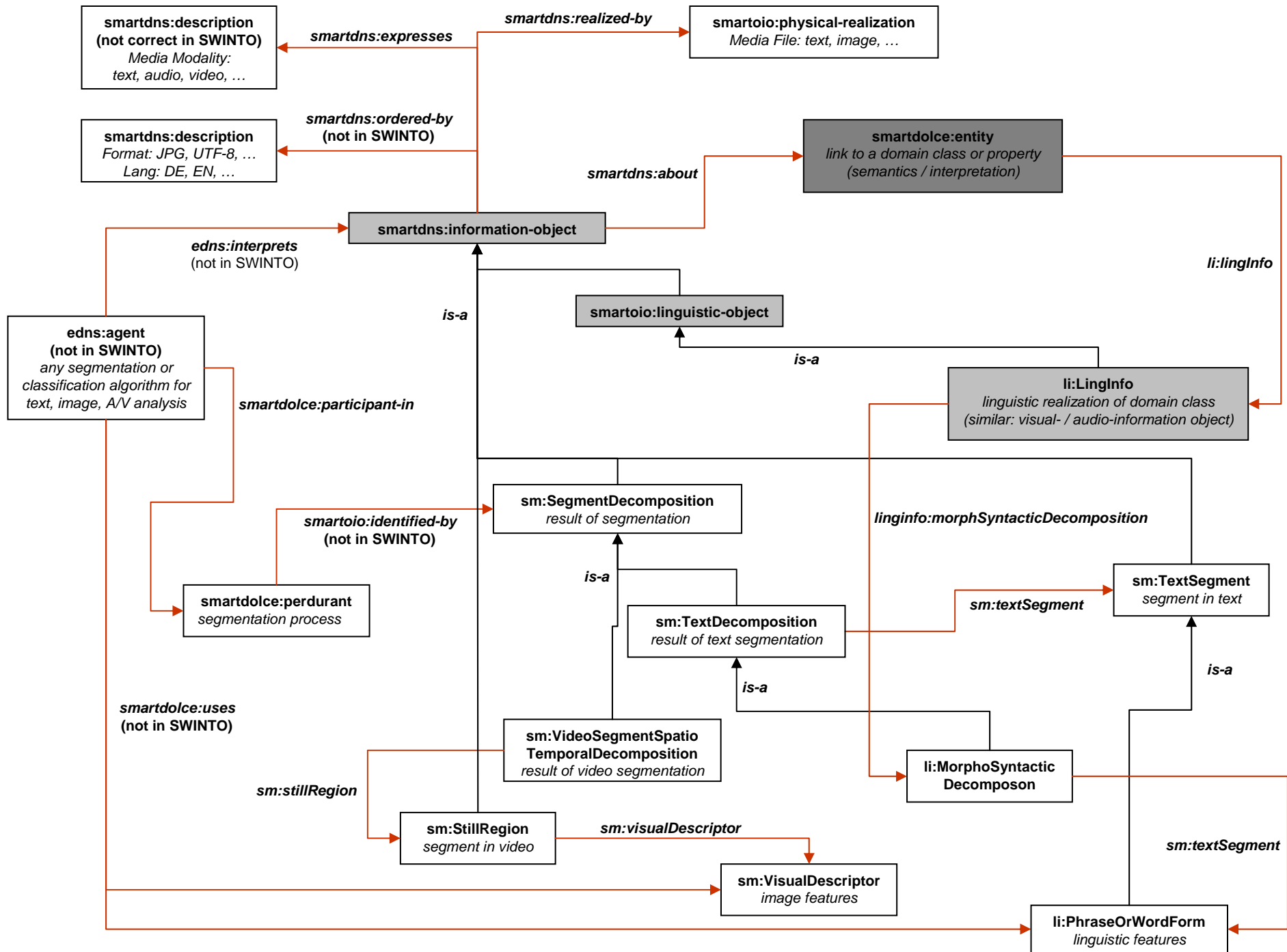
Towards Lexicalized Ontologies

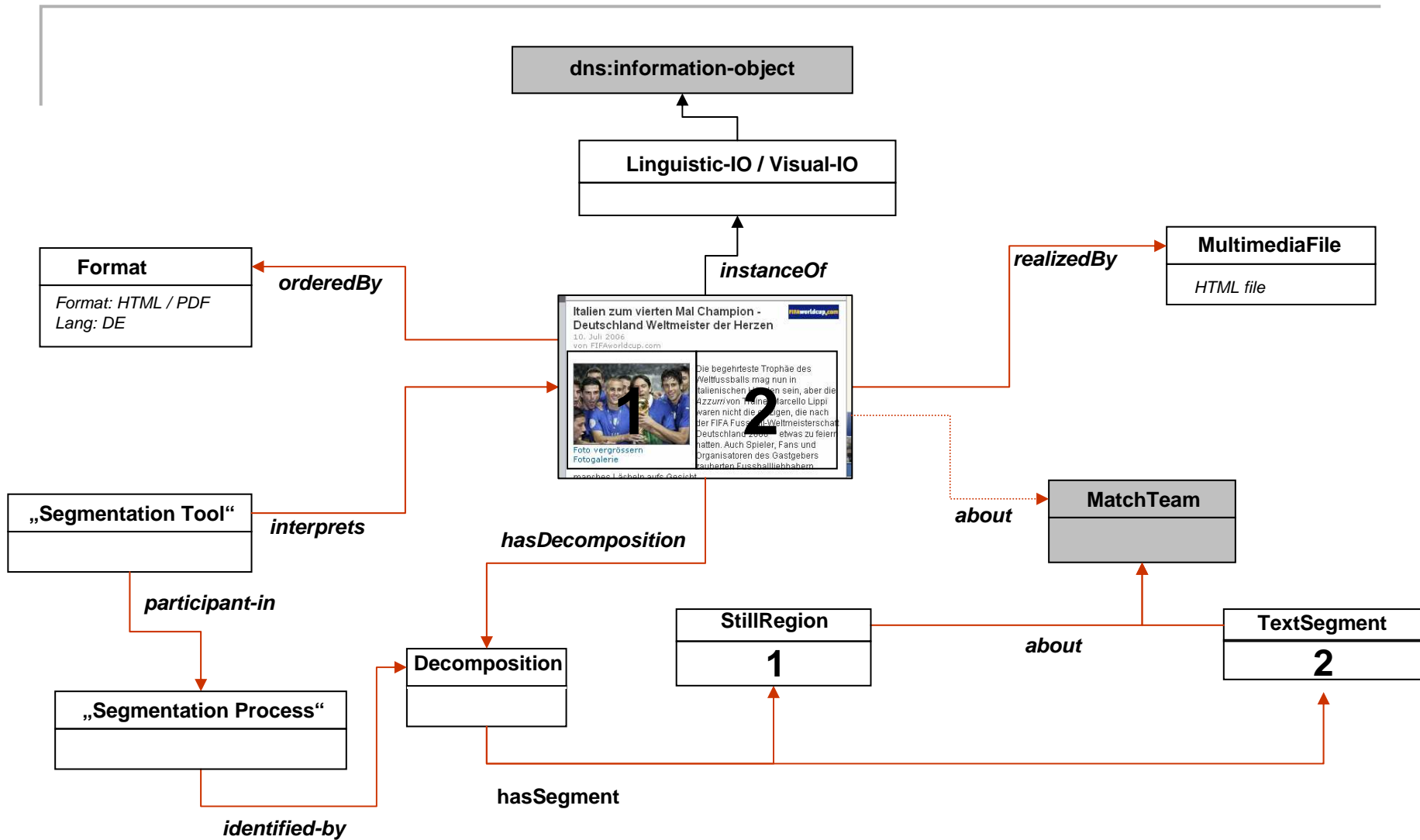


LingInfo - Lexicon Model for Ontologies

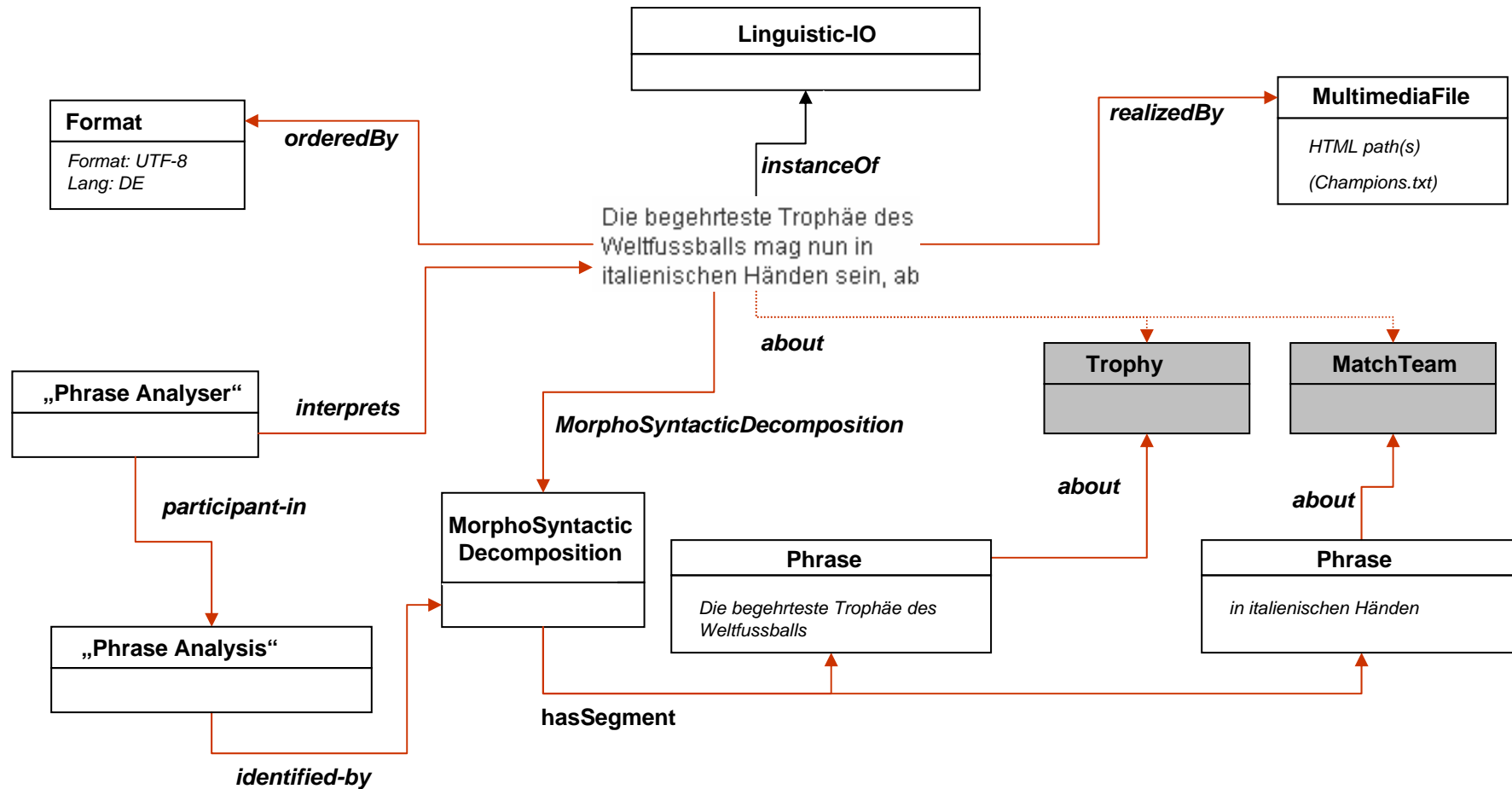
Paul Buitelaar, Michael Sintek, Malte Kiesel (2006) *A Lexicon Model for Multilingual/Multimedia Ontologies* In: Proceedings of the 3rd European Semantic Web Conference, Montenegro.



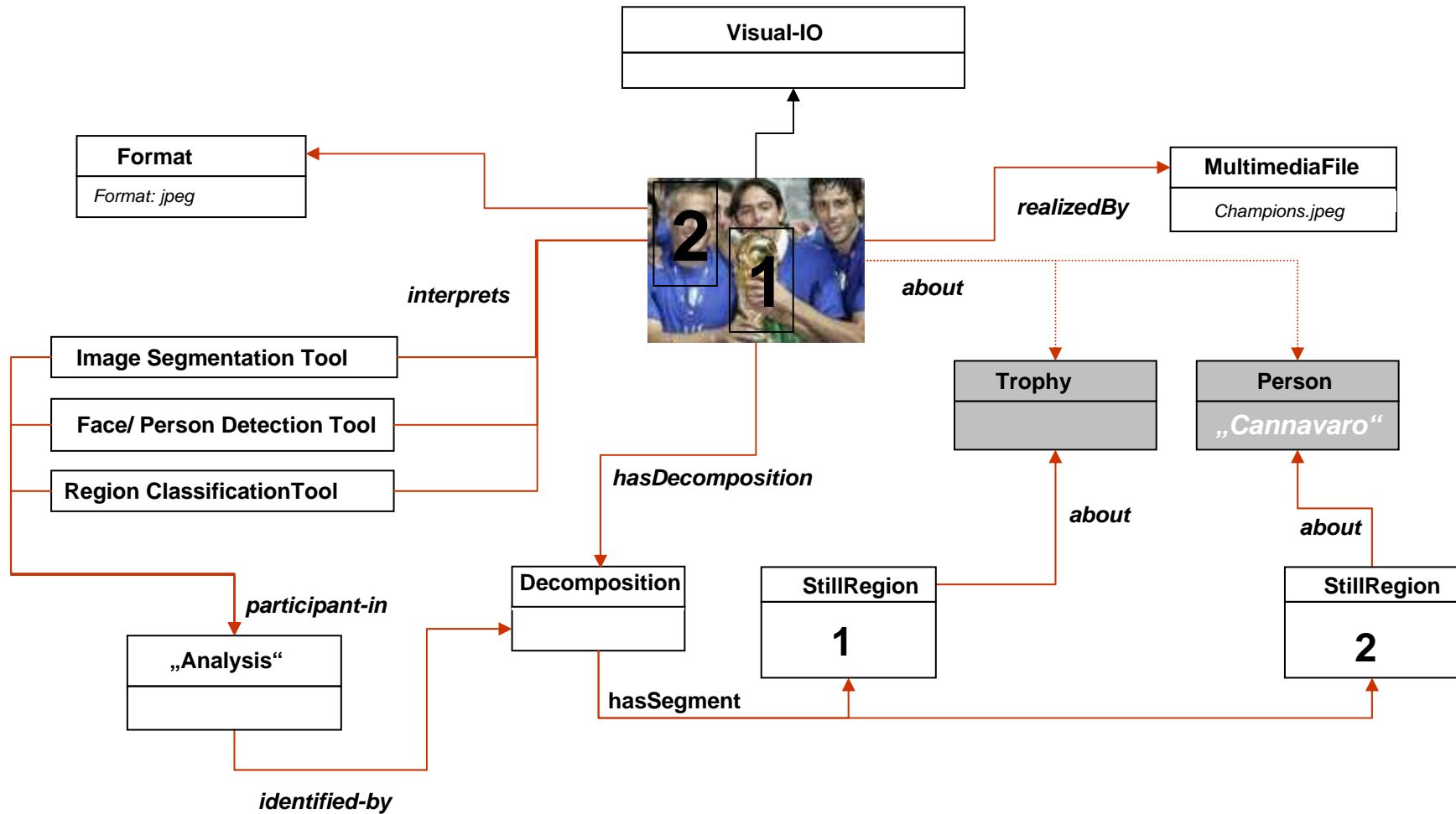




Analysis of a Text Segment



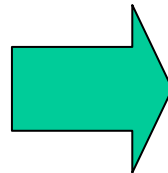
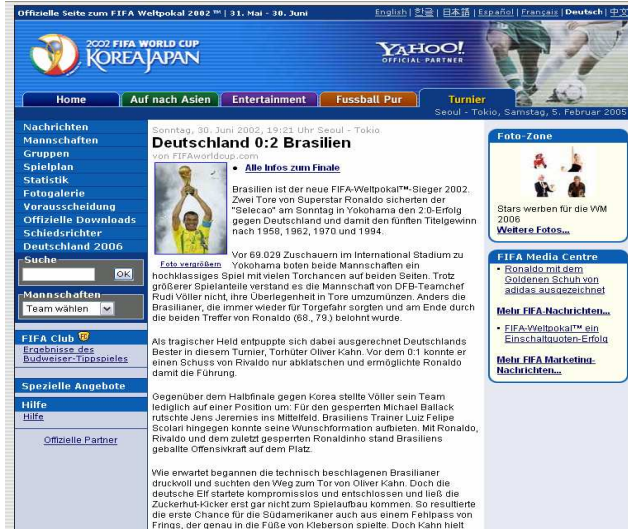
Analysis of an Image Segment



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Ontology Population from Text



Information
Extraction
(SProUT - DFKI)

MATCHINFO

id	rule
MI1	player_save_3

OUT:s_playeraction

INMATCH	s_match	
SPORTACTIONLOC	sportgeographicarea	
SPORTACTIONPOINT	sa_point	
CONFIDENCE	90	
SPORTACTIONOBJ	sportevent	
COMMITTEDON	s_footballplayer	
SPORTACTIONTYPE	parry	
SPORTACTIONDESCR	"schuss halten"	
COMMITTEDBY	s_footballplayer	"Kahn"



Instantiation
(Ontobroker – AIFB)

SOBA System

SMARTWEB

```
semistruct#Deutschland_vs_Brasilien_30_Juni_2002_18:00
[
  sportevent#matchEvents -> soba#ID11
].

soba#ID11:sportevent#Parry
[
  sportevent#committedBy ->
  semistruct#Deutschland_vs_Brasilien_30_Juni_2002_18:00_Oliver_Kahn_PFP
].
```

Knowledge-based QA

*Welche Tore wurden durch einen Freistoss vorbereitet?
(Which goals were prepared through a freekick?)*

```
FORALL Text, Prep, Goal <- Text[media#shows ->  
Prep:sportevent#FreeKick [smartsumo#prepares ->  
Goal:sportevent#ScoreGoal]].
```

The SOBA knowledge base contains answer objects for this question that were extracted from text passages:

Zidane schlug einen Freistoss in den Strafraum, und der Stürmer von Arsenal stürmte unbewacht zum langen Pfosten vor und bugsierte den Ball volley ins Netz.

(Zidane shot a freekick into the penalty area, and the Arsenal striker ran unopposed to the long post and shot the ball in the net.)

Knowledge-based Multimedia QA

*Zeige mir Bilder von Saves.
(Show me pictures of saves.)*

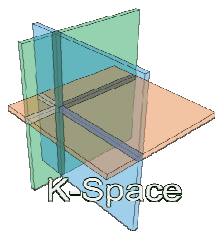
FORALL Picture, Save <- Picture[media#shows -> Save] AND Save:sportevent#save.

The SOBA knowledge base contains answer objects (images) for this question that were extracted from text captions of images:

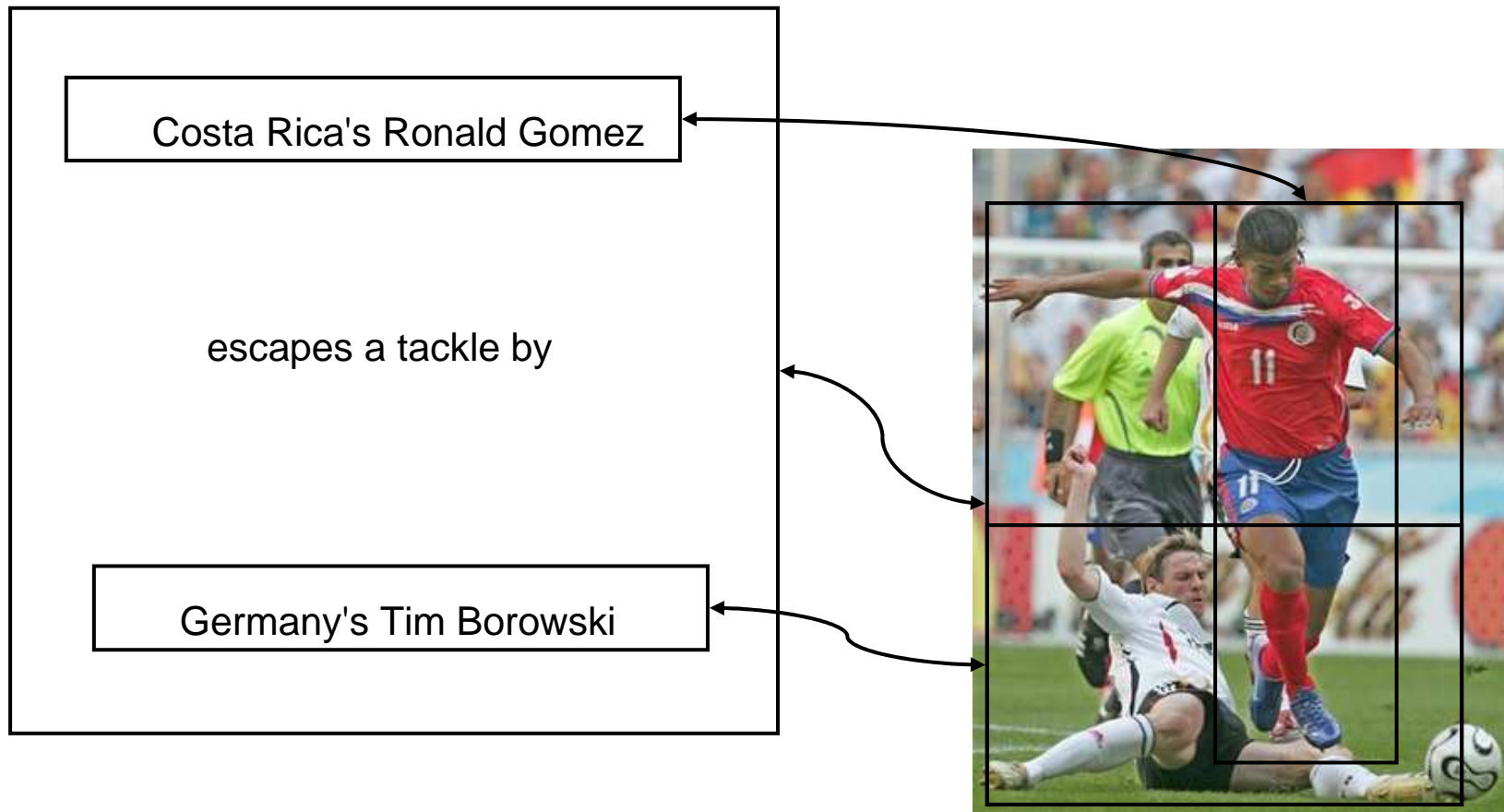


Events in Text and Image/Video

Costa Rica's Ronald Gomez escapes a tackle by Germany's Tim Borowski during the Germany v Costa Rica Group A match in Munich



Events in Text and Image/Video



Events in Video



HEADER



RED-CARD



TACKLE



PARRY



SHOT

Event Detection in Video

Event detection in broadcast video of field sports based on 6 detectors (by Dublin City Univ.):

- Close-up
- Field Line orientation
- Motion activity measure
- On-Screen Graphics Tracking
- Crowd image detector
- Speech-Band Audio Activity



86	0.578265	#	1:0.000000	2:0.733333	3:0.600000	4:0.000000	5:0.193333	6:0.404255
87	0.585595	#	1:0.000000	2:0.733333	3:0.640000	4:0.000000	5:0.220000	6:0.361702
88	0.590104	#	1:0.034483	2:0.733333	3:0.660000	4:0.000000	5:0.260000	6:0.319149
89	0.603227	#	1:0.034483	2:0.733333	3:0.700000	4:0.000000	5:0.300000	6:0.276596
90	0.643202	#	1:0.034483	2:0.800000	3:0.740000	4:0.000000	5:0.340000	6:0.234043
91	0.679645	#	1:0.034483	2:0.866667	3:0.780000	4:0.000000	5:0.346667	6:0.191489
92	0.722803	#	1:0.034483	2:0.933333	3:0.820000	4:0.000000	5:0.386667	6:0.148936
93	0.742455	#	1:0.034483	2:0.933333	3:0.860000	4:0.000000	5:0.433333	6:0.106383
94	0.738225	#	1:0.034483	2:0.866667	3:0.900000	4:0.000000	5:0.473333	6:0.063830
95	0.787911	#	1:0.034483	2:0.866667	3:0.920000	4:0.428571	5:0.506667	6:0.021277
96	0.795064	#	1:0.034483	2:0.866667	3:0.940000	4:0.428571	5:0.506667	6:0.021277
97	0.797680	#	1:0.034483	2:0.866667	3:0.940000	4:0.428571	5:0.520000	6:0.021277
98	0.807298	#	1:0.034483	2:0.866667	3:0.940000	4:0.428571	5:0.566667	6:0.021277



Text Mining for Event Detection

- DCU event detection delivers highlights
 - Video segments are classified as a highlight according to statistical ranking over 6 detectors
 - Highlights are not further classified into different events: SHOT, RED-CARD, HEADER, etc.
- Event extraction from text delivers event classes
- Some events are listed in tables
- *Use events extracted from tables and from text as complementary sources in video event detection*

Basic Idea and Strategy



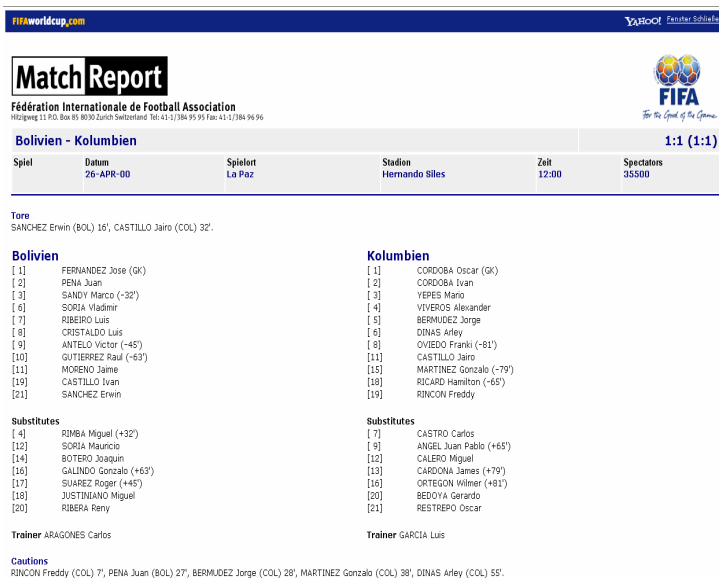
- Basic idea
 - Identify which video detectors are more prominent for which event class
 - For instance for CORNERKICK the “end-zone” video detector should be significantly high

- Strategy
 - Map events extracted from text and tables to a common ontology
 - Align events extracted from tables and text with corresponding video segments according to time
 - Analyze distribution of video detectors over event classes
 - Identify significant detectors for each class
 - (Feedback into the video event detection algorithm)

Complementary Resources Used

Tables:

- SmartWeb data set on world cup from fifaworldcup.yahoo.com



Match Report
Fédération Internationale de Football Association
Hölzweg 11 P.O. Box 85 8030 Zürich Switzerland Tel: +41 21 738 95 95 Fax: +41 21 738 96 96

Bolivien - Kolumbien 1:1 (1:1)

Spiel	Datum	Spielfort	Stadion	Zeit	Spektatoren
	26-APR-00	La Paz	Hernando Siles	12:00	35500

Tore
SANCHEZ Erwin (BOL) 16', CASTILLO Jairo (COL) 32'.

Bolivien

[1]	FERNANDEZ Jose (DK)
[2]	PENA Juan
[3]	SANDY Marco (-32')
[6]	SORIA Vladimir
[7]	RIBEIRO Luis
[8]	CRISTALDO Luis
[9]	ANTELO Victor (-45')
[10]	GUTIERREZ Raul (-63')
[11]	MORENO Jaime
[19]	CASTILLO Ivan
[21]	SANCHEZ Erwin

Kolumbien

[1]	CORDOBA Oscar (GK)
[2]	CORDOBA Ivan
[3]	YEPES Mario
[4]	VIVEROS Alexander
[5]	BERMUDEZ Jorge
[6]	DINAS Arley
[8]	OSVERO Franki (-61')
[11]	CASTILLO Jairo
[15]	MARTINEZ Gonzalo (-79')
[18]	RICARD Hamilton (-65')
[19]	RINCON Freddy

Substitutes

[4]	RIMBA Miguel (+32')
[12]	SORIA Maunico
[14]	BOTERO Joaquin
[16]	GALINDO Gonzalo (+63')
[17]	SUAREZ Roger (+45')
[18]	JUSTINIANO Miguel
[20]	RIBERA Remy

Trainer ARAGONES Carlos

Substitutes

[7]	CASTRO Carlos
[9]	ANGEL Juan Pablo (+65')
[12]	CALERO Miguel
[13]	CARDONA James (+79')
[16]	ORTEGON Wilmer (+81')
[20]	BEDOYA Gerardo
[21]	RESTREPO Oscar

Trainer GARCIA Luis

Cautions
RINCON Freddy (COL) 7', PENA Juan (BOL) 27', BERMUDEZ Jorge (COL) 28', MARTINEZ Gonzalo (COL) 38', DINAS Arley (COL) 55'.



3. Min. Erster Schuss zum Warmwerden für Jens Lehmann: Totti mit einem Freistoß aus 40 Metern. Der deutsche Keeper sagt "Danke" und pflückt die Kugel gelassen aus der Luft.

Text:

- Minute-by-minute text reports from ARD.de, bild.de, LigaLive.de

Event Extraction from Text

MATCHINFO

id	rule
M10	playeraction_2

OUT:s_playeraction

INMATCH	s_match	
SPORTACTIONLOC	sportgeographicarea	
SPORTACTIONPOINT	sa_point	
CONFIDENCE	90	
SPORTACTIONOBJ	sportevent	
COMMITTEDON	s_footballplayer	
SPORTACTIONTYPE	pass	
SPORTACTIONDESCR	"beautiful pass"	
COMMITTEDBY	s_footballplayer	"Gullit"

Text analysis with information extraction system SProUT (<http://sprout.dfki.de/>)

'A beautiful pass by Ruud Gullit set up the first Rijkaard header.'

DISJ:DI1

MATCHINFO

id	rule
M11	player_action

OUT:s_playeraction

INMATCH	s_match	
SPORTACTIONLOC	sportgeographicarea	
SPORTACTIONPOINT	sa_point	
CONFIDENCE	90	
SPORTACTIONOBJ	sportevent	
SPORTACTIONTYPE	header	
SPORTACTIONDESCR	"header"	
COMMITTEDBY	s_footballplayer	"Rijkaard"
COMMITTEDON	s_footballplayer	

Extraction Results and Some Issues

- Minute-by-Minute Reports Alignment
 - Removing duplicate events in close to or within the time were the event occurred for the first time
 - 45 event-types
 - 1200 events in 5 final football world cup matches
 - 850 events after events alignment -> 170 events per match

- Match vs. Video Time
 - Time information in text varied from the time in videos
 - manual alignment (OCR is planned)
 - Differences in first half, second and extra
 - 1st half of the game – time difference 3-21 seconds
 - 2nd half of the game – 57-185 seconds
 - Extra time – 269-415 seconds

Cross-Media Feature Extraction

- Aggregate results from event extraction from tables and text with video detection features

```
<cornerkick id="6" occurred="55" >  
  <Confidence Max="0.958193" Min="0.526706" Avg="0.7614" stdev="0.0951" />  
  <Crowd Max="1" Min="0" Avg="0.3465" stdev="0.2892" />  
  <Audio Max="1" Min="0.533333" Avg="0.9042" stdev="0.1361" />  
  <ScoreBoard Abs Max="1" Min="0" Avg="0.7087" stdev="0.338" />  
  <Endzone Max="1" Min="0.142857" Avg="0.8016" stdev="0.2106" />  
  <Motion Max="1" Min="0.408" Avg="0.7253" stdev="0.1286" />  
  <CloseUp Max="0.8125" Min="0.102128" Avg="0.3602" stdev="0.1732" />  
</cornerkick>
```

Ontology Learning

$\forall x (\text{country}(x) \rightarrow \exists y \text{ capital_of}(y, x) \wedge \forall z (\text{capital_of}(z, x) \rightarrow y = z))$

$\text{disjoint}(\text{river}, \text{mountain})$

$\text{capital_of} \leq_R \text{located_in}$

$\text{flow_through}(\text{dom} : \text{river}, \text{range} : \text{GE})$

$\text{capital} \leq_C \text{city}, \text{city} \leq_C \text{InhabitedGE}$

$c := \text{country} := \langle i(c), \|c\|, \text{Ref}_C(c) \rangle$

$\{\text{country}, \text{nation}, \text{Land}\}$

$\text{river}, \text{country}, \text{nation}, \text{city}, \text{capital}, \dots$

General Axioms

Axiom Schemata

Relation Hierarchy

Relations

Concept Hierarchy

Concept Formation

(Multilingual) Synonyms

Terms

Text & Web Mining for OL

*“ISOLDE” – Joint work with Nicolas Weber
(now at Knowcenter, Graz - Austria)*

Extract classes and a class hierarchy by a combination of text & web mining:

1. Derive class candidates from terms in the context of Named-Entities in a domain corpus
2. Derive additional knowledge for these classes from web resources

NER, Contexts, IE Patterns

*„... obwohl ein Trainer wie Klinsmann da anders vorgehen würde ...“
(... although a trainer like Klinsmann would act differently ...)*

Named-Entity Recognition

„... obwohl, ein Trainer wie <PERSON> Klinsmann </>...“

Context Extraction / IE Patterns

{NP} [wie] NE

Class Candidate Extraction

Trainer






Web Resources - DWDS

DWDS – Digitales Wörterbuch der Deutschen Sprache (Digital Dictionary for the German Language)

Das Digitale Wörterbuch der deutschen Sprache des 20. Jahrhunderts [Anmelden](#) [Home](#) [Kontakt](#) [Impressum](#)


DWDS









DWDS Homepage Wörterbuch Corpora Wortinformation [Hilfe](#)

Wörterbuch 
Textbasis 
Corpuserschließung 
Aktuelles 
Über das DWDS 

-wart, der **1. Ballspiele** Spieler im Tor, der den Ball fängt, abwehrt: der T. warf den Ball zum Verteidiger **2. hist.** Wachmann am Tor;

-wärter, der vgl. -wart 2;

-weg, der Weg, der durch ein Tor führt: ein enger, finsterner T.; vgl. Tor(es)-  zu -lauf: Riesentorlauf

warten², wartete, hat gewartet ___etw., bes. technische Anlagen, Geräte, zu ihrer Erhaltung (ständig) pflegen, betreuen: Maschinen, Geräte w.; der Wagen muß gut gewartet werden; das Pflegen und Warten der Anlagen; eine größere Anzahl von Tieren pflegen, versorgen: Bauten, in denen eine Arbeitskraft 3_000 bis 5_000 Schweine warten kann [Tageszeitung 1960](#) ; geh. veraltend jmdn. w.: er hätte sie für sein Haus benutzt, zum Warten der Kinder [Seghers 5,231 \(Transit\)](#) ; Meine Töchter sollen dich warten schön [Goethe Erlkönig](#)  dazu ab-,  aufwarten;  /in Verbindung mit etw., was gewartet wird, z. B./ Burg-,  Haus-,  Kassen-,  Platzwart;  /ferner in/ Tank-,  **Torwart**

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Automatisch berechnete semantische Relationen aus dem WDG [Hilfe](#)

Synonyme

Hyperonyme
Spieler

Hyponyme
Abwehr Abwehrspieler

Web Resources - Wiktionary

Wiktionary
[ˈwɪkʃənəri], n
Das freie Wörterbuch
a wiki-based Open Content dictionary

Navigation

- Hauptseite
- Themenportale
- Zufälliger Eintrag
- Inhaltsverzeichnis

Mitarbeit

- Wiktionary-Portal
- Fehlende Einträge
- Letzte Änderungen

Hilfe

- Fragen?
- Finanzielle Hilfe
- Nutzungshinweise

Suche

Anmelden | Benutzerkonto erstellen

Wörterbucheintrag | Diskussion | Seite bearbeiten | Versionen/Autoren

Torwart

[bearbeiten]

Torwart (Deutsch)

[bearbeiten]

Substantiv, m

Silbentrennung: Torwart, Plural:

Aussprache:
IPA: [...], Plural: [...]
Hörbeispiele: -, Plural: -

Bedeutungen:
[1] Derjenige Fußballspieler, dessen Aufgabe es ist, gegnerische Tore zu vermeiden und der hierfür als einziger Spieler auch seine Hände einsetzen darf.

Abkürzungen:

Herkunft:
aus Tor und Wart

Synonyme:
Tormann, Torhüter, Keeper

Gegenwörter:
Feldspieler, Verteidiger, Abwehrspieler, Mittelfeldspieler, Stürmer, Offensivspieler

Oberbegriffe:
Sport, Fußball, Fußballspieler

Kasus	Singular	Plural
Nominativ	der Torwart	die Torleute
Genitiv	des Torwarts	der Torleute
Dativ	dem Torwart	den Torleuten
Akkusativ	den Torwart	die Torleute

Web Resources - Wikipedia



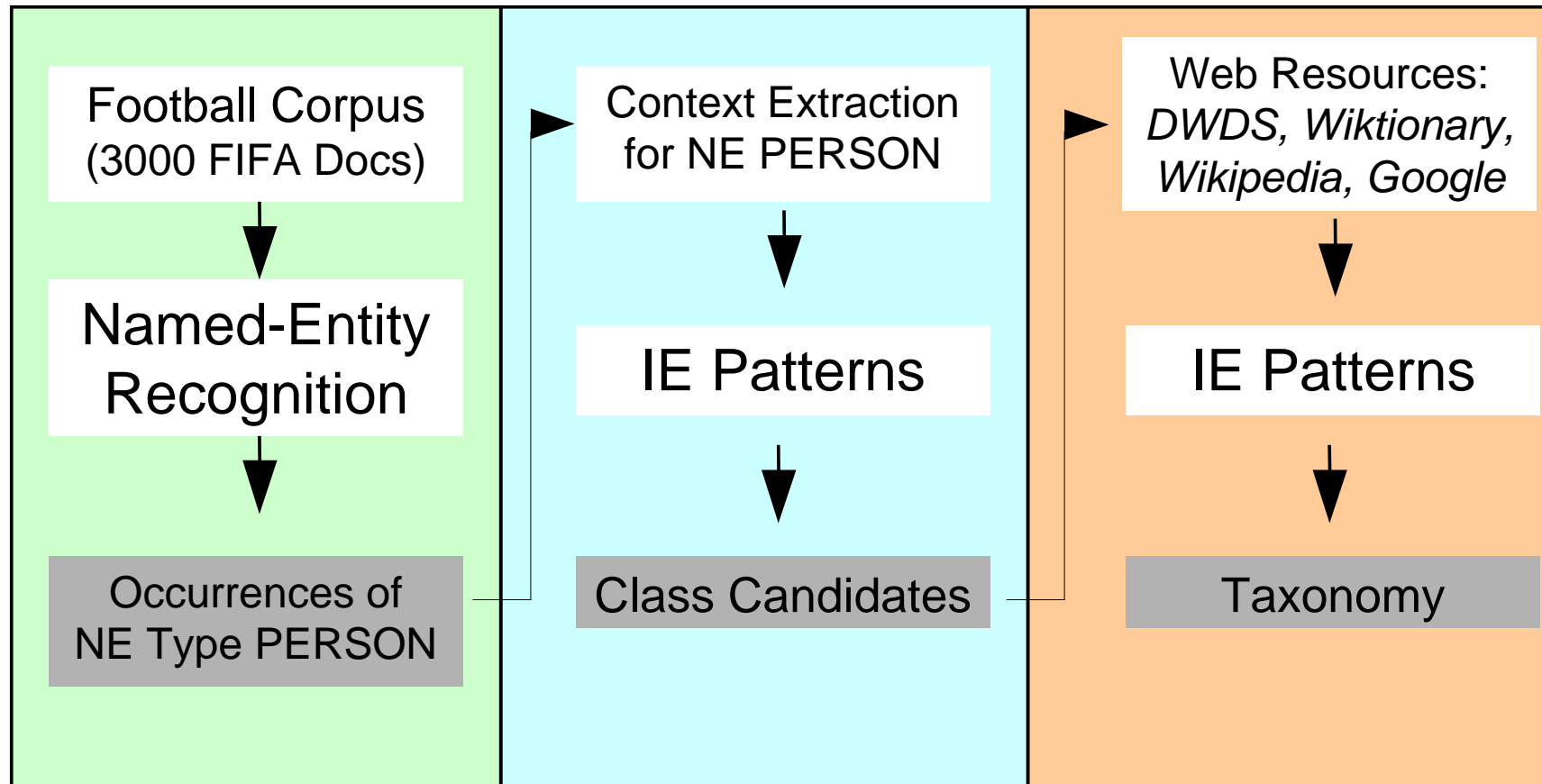
The screenshot shows the Wikipedia article for 'Torwart'. The page layout includes a navigation sidebar on the left with links like 'Hauptseite', 'Über Wikipedia', and 'Themenportale'. The main content area features a table of contents for 'Torwart' with one entry: '1 Torwarte im Fußball'. To the right of the text is a photograph of a soccer goalkeeper in a yellow jersey diving to catch a ball. The caption below the photo reads 'Ein Fußballtorwart'.

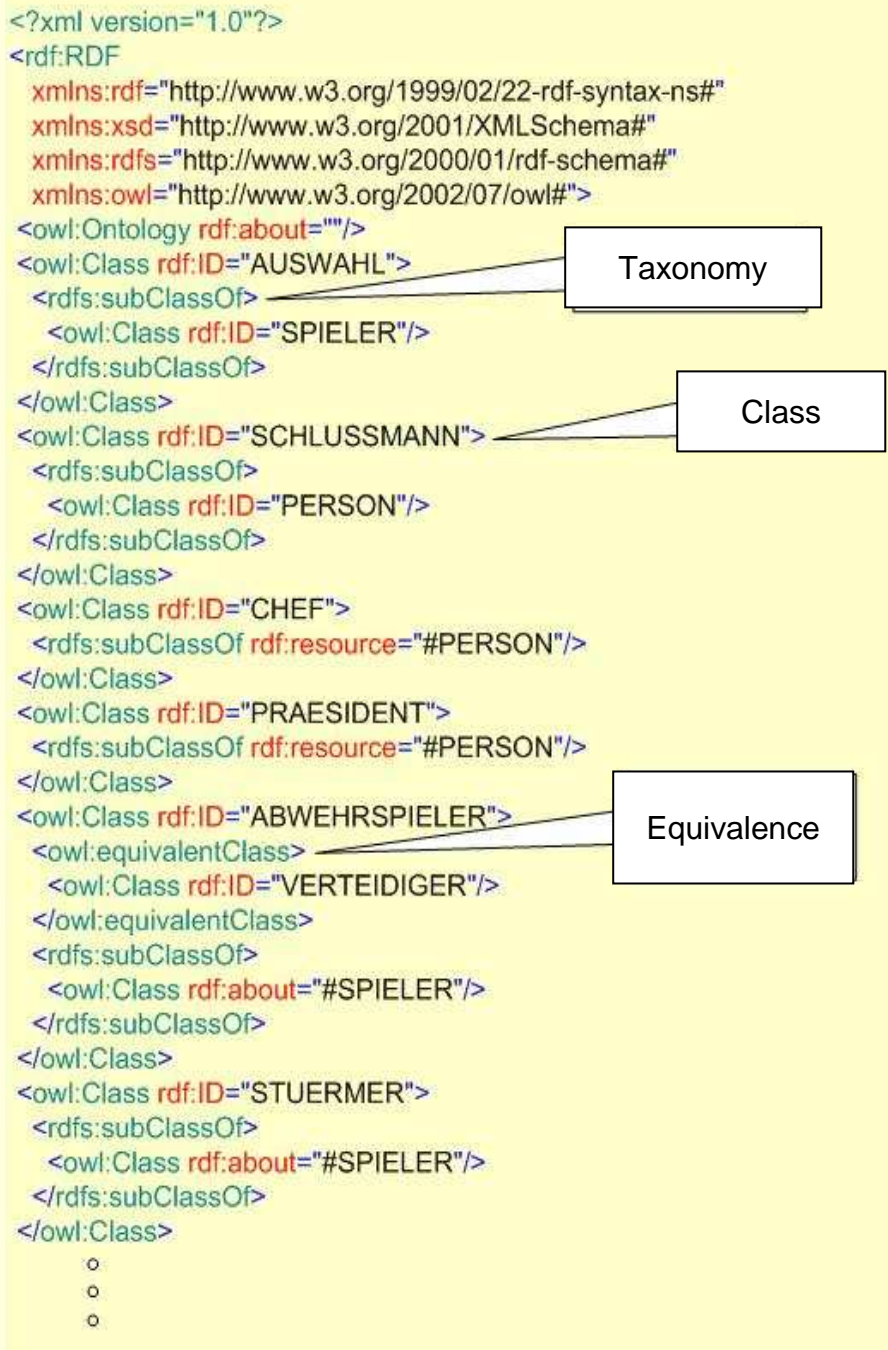
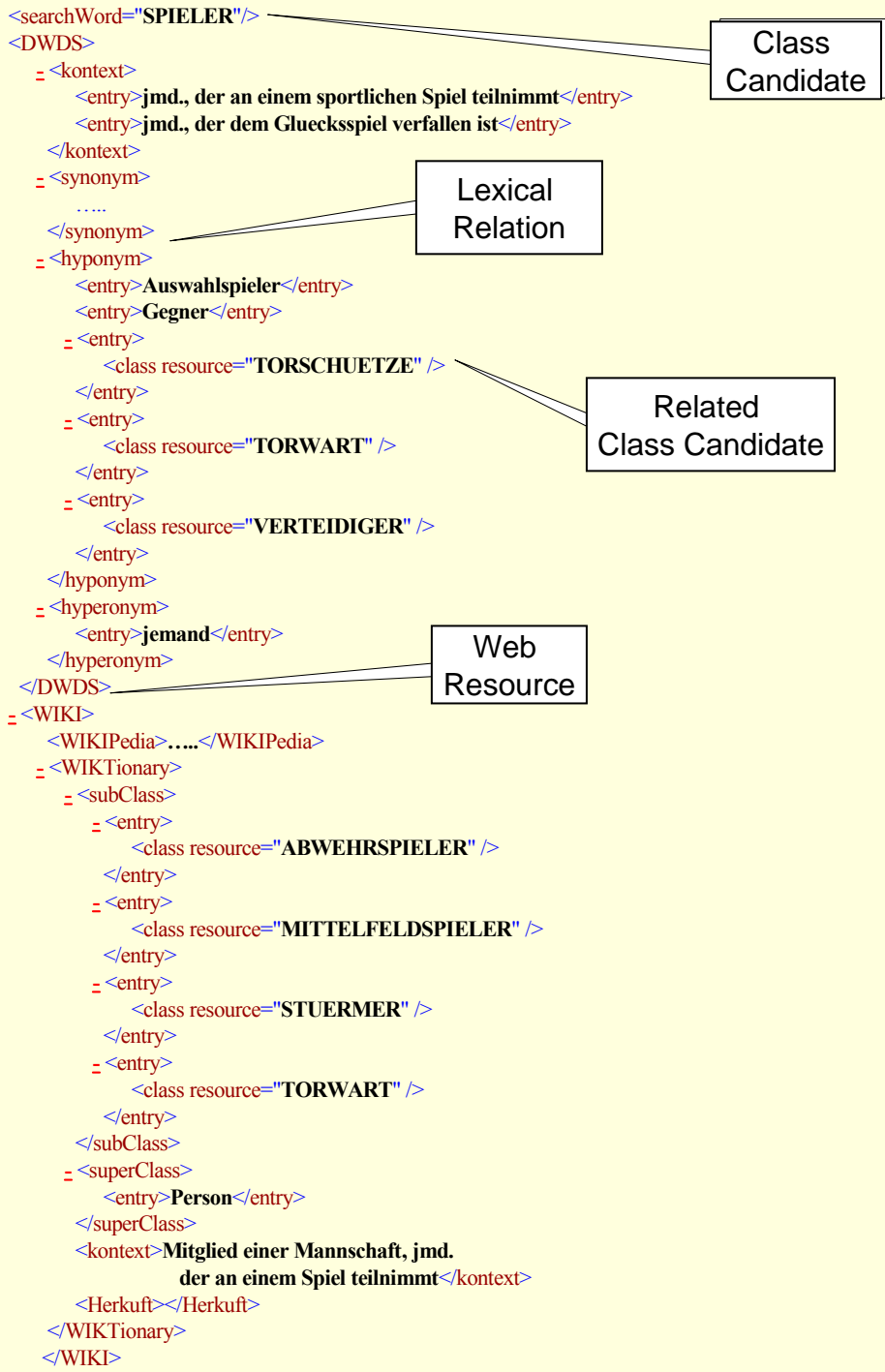
Der **Torwart** (Torhüter, Tormann, Keeper, Schweiz. Goalie) **ist ein Mitspieler** einer Mannschaftssportart. Er ist der defensivste Spieler seiner Mannschaft und seine Hauptaufgabe besteht darin zu verhindern, dass das Spielgerät (z.B. ein Ball) ins Tor der eigenen Mannschaft

> **Torwart ist ein Mitspieler**

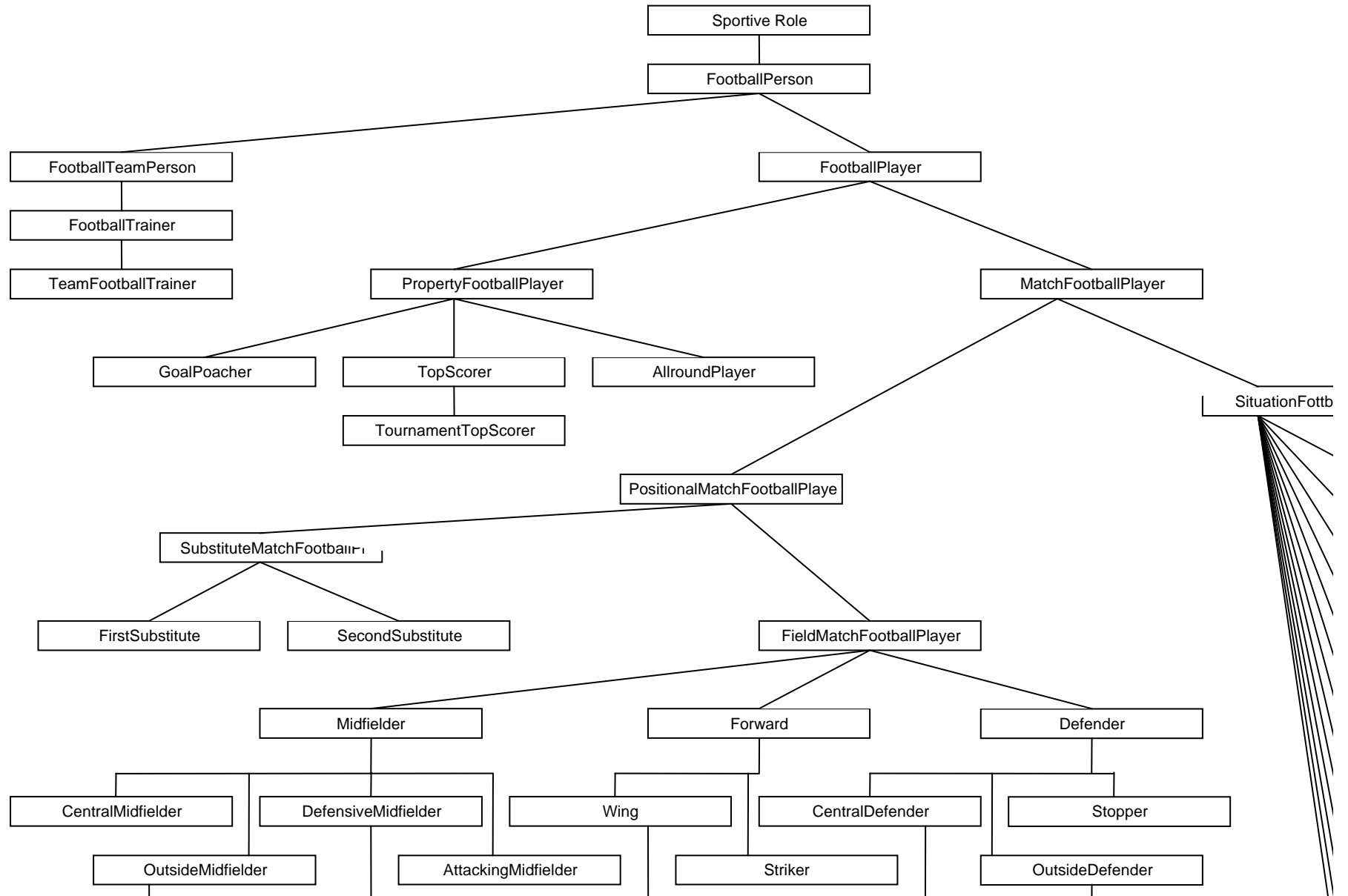
> **SubClassOf (Torwart, Spieler)**

Experiment

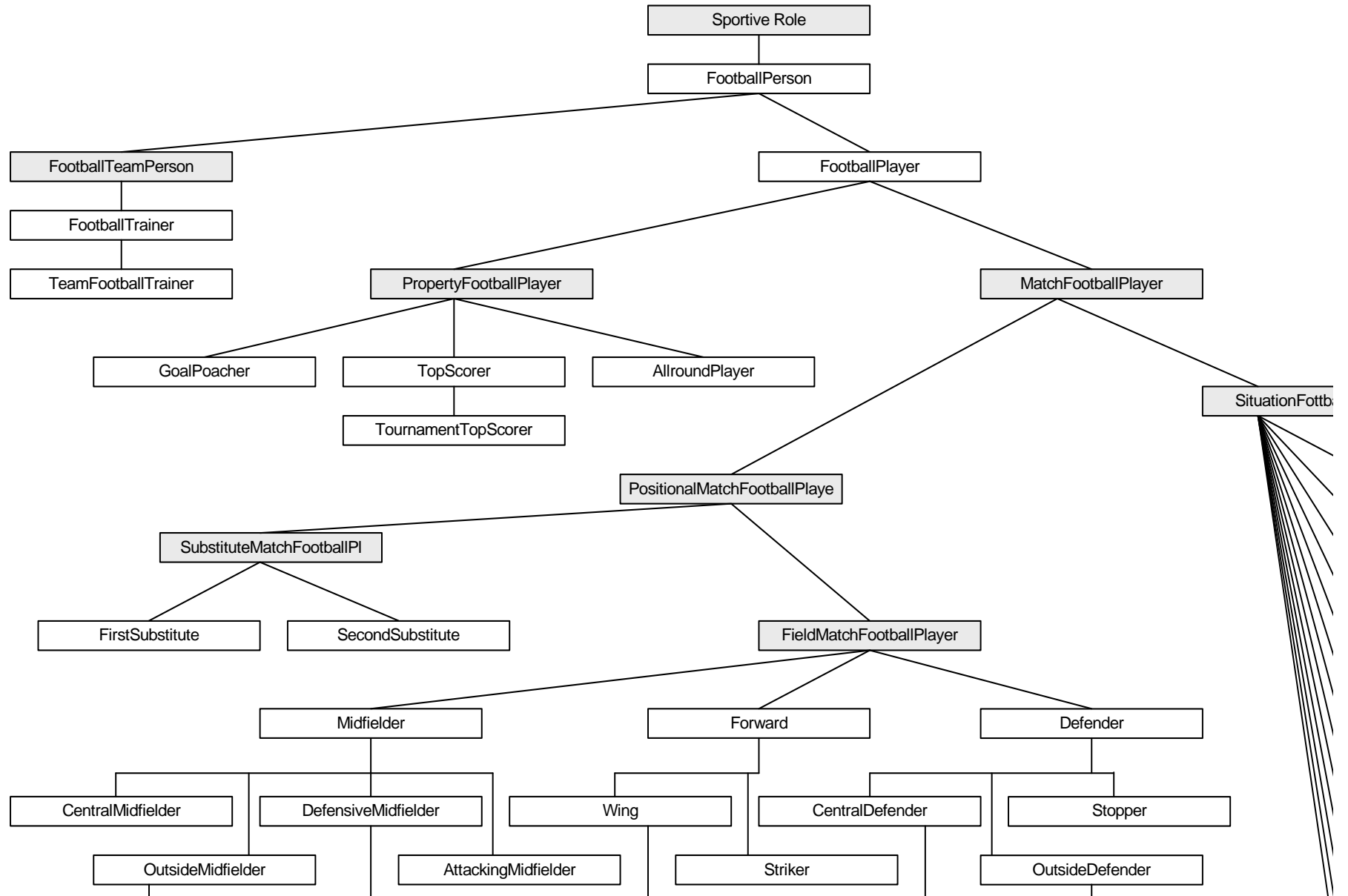




Evaluation - SmartWeb Ontology



SmartWeb Ontology “Simplified”



Evaluation – Precision and Recall

	total	true positives	RECALL	PRECISION
Classes				
SportEvent	50	23	46,0%	31,9%
SportEvent (simple)	43	23	53.4%	35,3%
Relations				
SportEvent	226	24	10,6%	10,4%
SportEvent (simple)	107	24	22,4%	21,6%

Overview

- Semantic Metadata
 - Metadata, Semantic Metadata, Ontologies
 - Ontologies, Multilinguality & Multimedia
- Text Mining for Semantic Metadata Extraction
 - Ontology Population from Text
 - Multimedia (Image/Video) Ontology Population
 - Ontology Learning (for Multimedia Analysis)
- Do Semantic Metadata Help?
 - The MuchMore Case

Do Semantic Metadata Help?

- Assumption of semantic metadata is more accurate information retrieval
 - Semantics adds context
- Evaluation needed
 - How /what to evaluate?
- Use case on cross-lingual information retrieval
 - MuchMore
 - Retrieving relevant English documents on a query constructed from a German patient record





Epikrise: Aufnahme der Patientin mit hellroten Blutabgängen seit Februar diesen Jahres. Die Patientin war im Jänner wegen Anämie im KfJ aufgenommen, lehnte jedoch dort eine Abklärung ab. Der postoperative Verlauf war bis zum 4. postoperativen Tag ungestört, dann kam es zum Auftreten von massiven Ileusbeschwerden, sowie der Entstehung eines Platzbauches und peritonealem Zustandsbild. Grund dafür war eine Anastomosendehiszenz der serosierten Klammernahtreihe. Es erfolgte die Relaparotomie mit Lavage, Anastomosenresektion und doppeläufiger Ileostomie, sowie Platzbauchnähten. Unmittelbar postoperativ erholte sich die 89jährige Patientin in erstaunlicher Weise. Im weiteren Verlauf jedoch kam es zu einer nicht beherrschbaren Bauchdeckensepsis, der die Patientin schließlich am 3.4.1999 erlag. Histologie I. Tubuläres Adenokarziom: des Dickdarms mittlerer Reife(G 2). Klassifikation nach UICC: pT3 pN2 RX. Submucöses Lipom. II. Akut entzündete Anastomosendehiszenz.

UMLS Terms and Semantic Relations

- Spuelung (2)
- Ileostomie (2)
- Frauen (1)
- Diagnose (1)
- Kolon (1)
- Adipositas (1)
- Blut (1)
- Blut (1)
- Septikaemie (1)
- Sepsis (1)
- Histologie (1)
- Dickdarm (1)
- Klassifikation (1)
- Lipom (1)

Gastric Lavage*

Mesh denomination: **Irrigation**

- E5.510 
 - ANCESTORS 
 - SIBLINGS 
 - CHILDREN 
 - Bronchoalveolar Lavage
 - Gastric Lavage
 - Peritoneal Lavage

Search Engine Options

Eurospider CSLI CMU

Output: German English Both

Search

postoperativ erholte sich die 89-jährige Patientin in erstaunlicher Weise. Im weiteren Verlauf jedoch kam es zu einer nicht beherrschbaren Bauchdeckensepsis, der die Patientin schließlich am 3.4.1999 erlag. Histologie I. Tubuläres Adenokarziom: des Dickdarms mittlerer Reife(G 2). Klassifikation nach UICC: pT3 pN2 RX. Submucöses Lipom. II. Akut entzündete Anastomosendehiszenz.

UMLS Terms and Semantic Relations

Spuelung (2)

- treats Adipositas
- analyzes Blut
- precedes Ileostomie

Ileostomie (2)

- Frauen (1)
- Diagnose (1)
- Kolon (1)
- Adipositas (1)
- Blut (1)
- Blut (1)
- Septikaemie (1)
- Sepsis (1)
- Histologie (1)
- Dickdarm (1)
- Klassifikation (1)
- Lipom (1)

Mesh denomination: **Irrigation**

- E5.510
 - ANCESTORS
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Search Engine Options

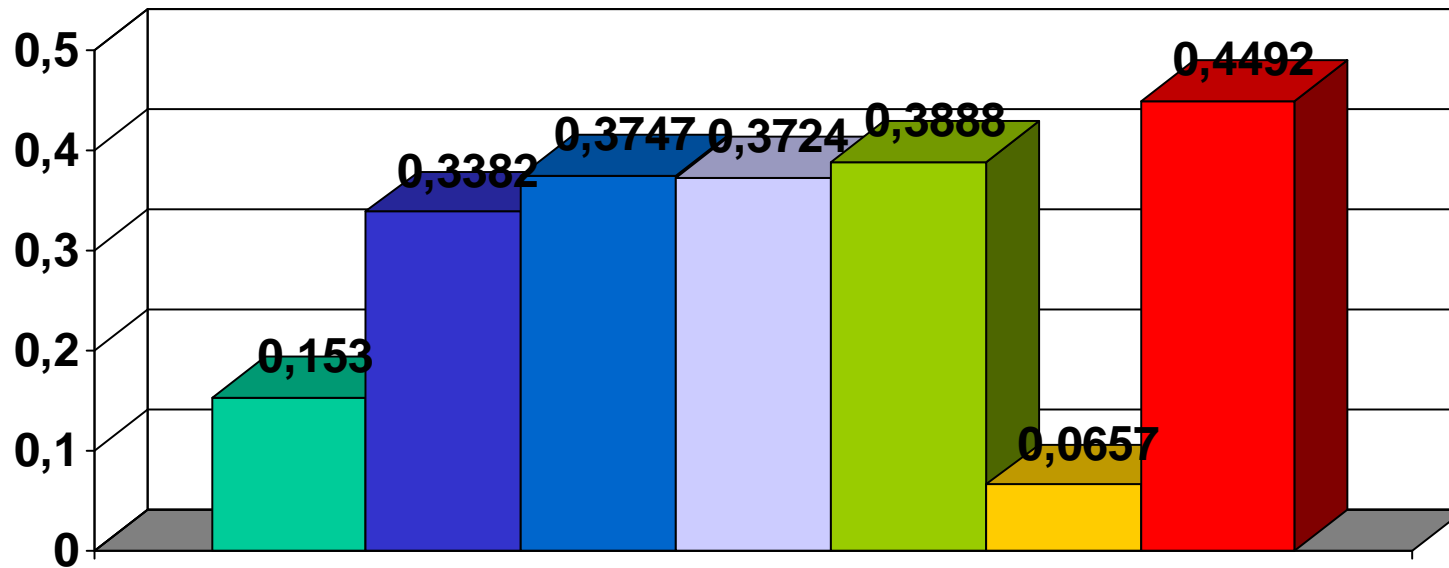
Eurospider CSLI CMU

Output: German English Both

18 documents were found that match your search.

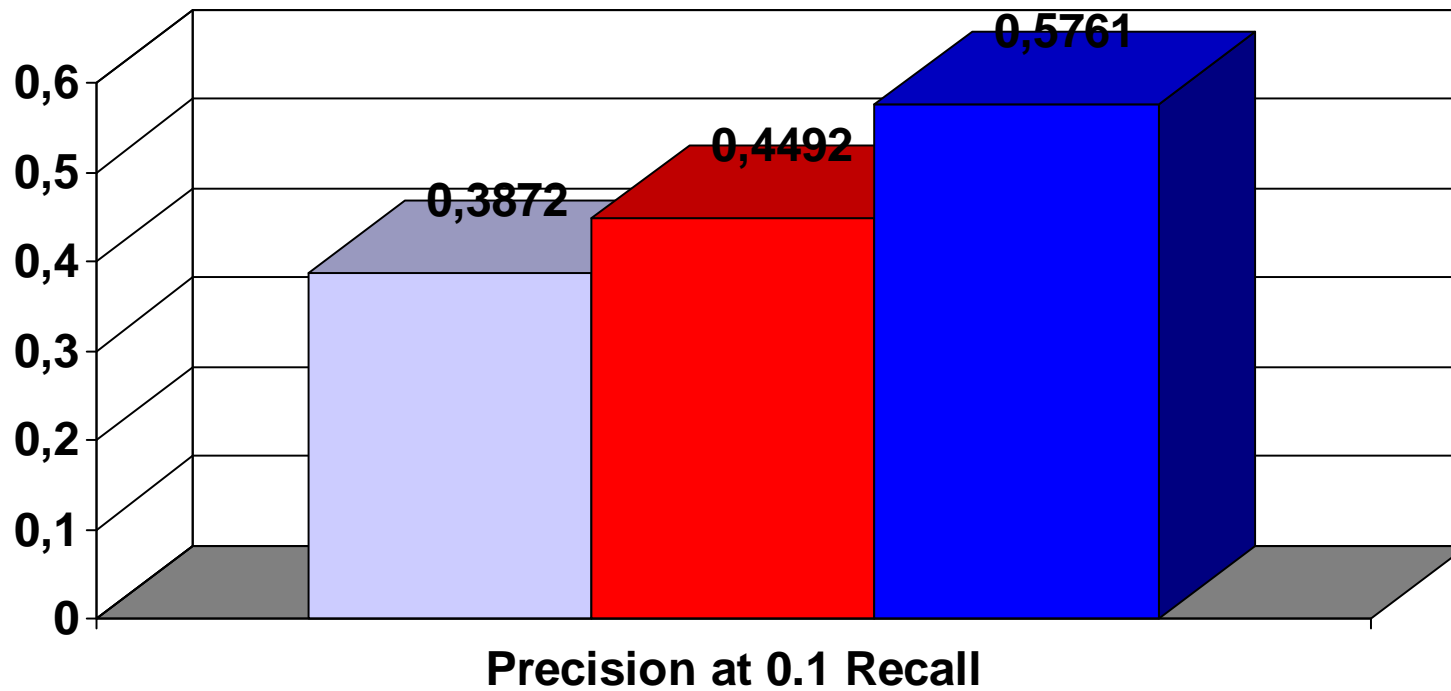
You are currently viewing documents 1 - 10

Ranked Documents	Summarize
<input type="checkbox"/> Die kontinente Ileostomie Gegenwaertige Indikationen, Vorgehensweisen und Ergebnisse Zusammenfassung. In 12 Jahren wurden 73 Patienten mit kontinenter Ileostomie operiert. ...	
<input type="checkbox"/> Continent ileostomy: current indications, procedure and outcome Over a period of 12 years, 73 patients received a continent ileostomy. 19 Kock pouches were primarily constructed due to contraindications against the ...	
<input type="checkbox"/> Rupture of a colonic mucocoele after ileostomy(Hartmann procedure) Abstract. We report an unusual complication in a 53-year-old woman following ileostomy for Crohn's disease 22 years previously. ...	
<input type="checkbox"/> Complications and their management after restorative proctocolectomy The overall rate of complications after ileal pouch-anal anastomosis is 60 %. This rate, however, includes complications such as bowel-obstruction and hernias ...	
<input type="checkbox"/> Pre- and postoperative quality of life after ileal pouch-anal anastomosis for ulcerative colitis and familial adenomatous polyposis After ileal pouch-anal anastomosis in patients with ulcerative colitis(UC) and familial adenomatous polyposis(FAP), in addition to postoperative morbidity ...	
<input type="checkbox"/> Quality of life after proctocolectomy in ulcerative colitis Nowadays, restorative proctocolectomy is considered the" gold standard" in the surgical therapy of ulcerative colitis. Alternative procedures such as Brooke ileostomy ...	
<input type="checkbox"/> Stomaphysiologie Zusammenfassung. Die Anlage eines Kunstafters kann neben der psychologischen Belastung auch metabolische Konsequenzen haben. ...	
<input type="checkbox"/> Metabolic consequences after ileostomy In addition to psychological stress, stomas may lead to metabolic consequences. Colostomies normally cause only minor physiological problems; however, patients with ...	
<input type="checkbox"/> Colitis ulcerosa - funktionelle Spaetresultate nach ileumpouchanaler Anastomose Zusammenfassung. Nach ileumpouchanaler Anastomose(IPAA) ist die Stuhlfrequenz anfangs deutlich erhoeht und adaptiert waehrend des ersten Jahres auf etwa 5/Tag. Stuhlvolumen und ...	
<input type="checkbox"/> Prae- und postoperative Lebensqualitaet von Patienten mit Colitis ulcerosa und familiaerer adenomatoeser Polyposis bei ileoanaler Pouchoperation Zusammenfassung. Die Lebensqualitaet stellt nach ileoanaler Pouchoperation bei Patienten mit Colitis ulcerosa(CU) und familiaerer adenomatoeser Polyposis(FAP), neben ...	



Precision at 0.1 Recall





■ UMLS + MESH ■ Sim-Thes ■ Sim-Thes + UMLS + MESH

Acknowledgements

