NewsReader

recording history by processing massive streams of daily news

HACKATON-2015 January 21st Amsterdam January 31st London







ICT 316404 FP7-ICT-2011-8 www.newsreader-project.eu













Can we handle the news?

- Information broker LexisNexis:
 - 1.5 million news articles on a single working day
 - 30,000 different sources

How did the automotive industry change during the financial crisis?

- 6 million English articles in the LexisNexis archive published in the last 10 years
- In 2012: 2 million Google hits for "Volkswagen takeover" not sorted by publication date



Web Afbeeldingen Nieuws Video's Zoekhulpmiddelen Shopping Meer ▼

Ongeveer 966.000 resultaten (0,25 seconden) December 2015

Volkswagen Group - Wikipedia, the free encyclopedia

en.wikipedia.org/wiki/Volkswagen_Group ▼ Vertaal deze pagina Porsche formally announced in a press statement that it did not intend to take over Volkswagen Group, setting its offer price at the lowest possible legal value, ... Porsche - Škoda Auto - Seat - Martin Winterkorn

Porsche and VW: What the Hell Happened? - Timeline of ...

www.automobilemag.com > Features > News ▼ Vertaal deze pagina 26 okt. 2009 - But "a complete takeover is not our intention," says Wiedeking. "Instead ... Porsche essentially collapses into the arms of VW; the merger is to be ...

Ex-Porsche CEO Must Stand Trial Over Failed VW Takeover ...

www.bloomberg.com/.../ex-porsche-ceo-wiedeking-t... ▼ Vertaal deze pagina 26 aug. 2014 - A German court revived criminal charges against two former Porsche SE executives involving a failed takeover of Volkswagen AG, saying ...

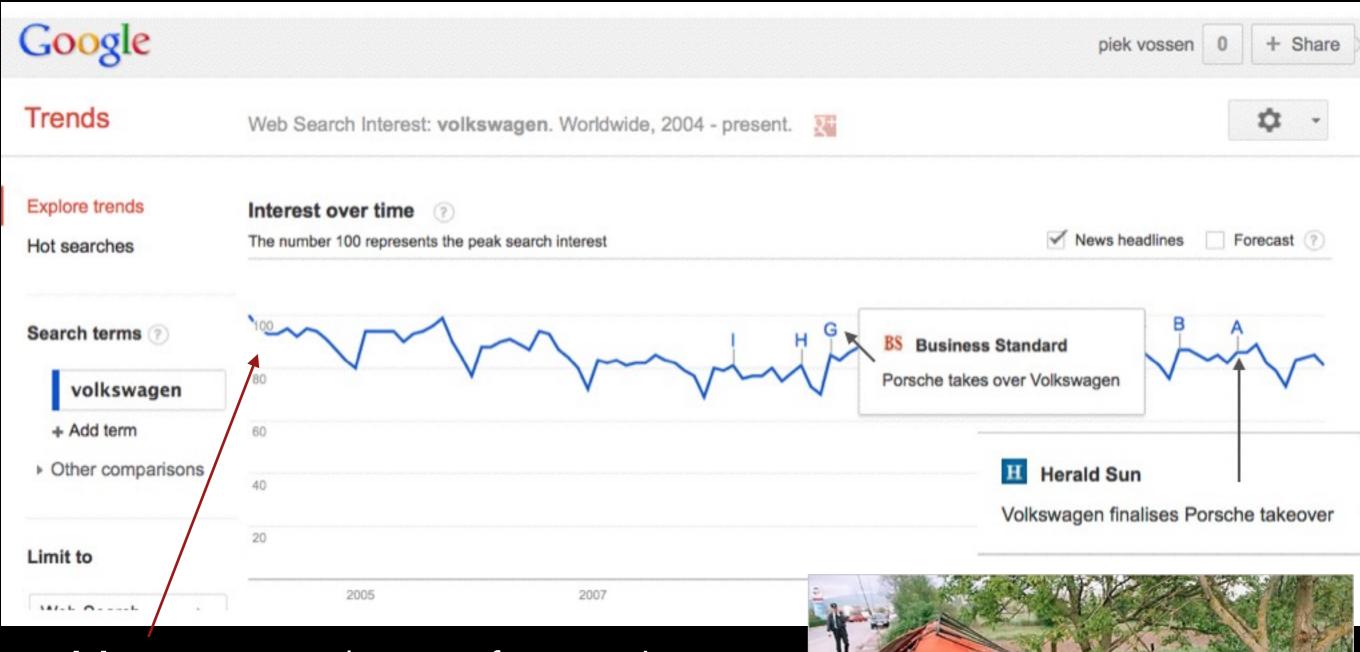
Fiat, VW deny report that they are in merger talks

www.autonews.com/.../fiat-vw-deny-report-that-they... ▼ Vertaal deze pagina 17 jul. 2014 - Volkswagen has approached rival Fiat about a possible merger, Germany's Manager Magazin reported on its website earlier today, citing ...

Volkswagen swallows Porsche | Business | The Guardian

www.theguardian.com > ... > Automotive industry ▼ Vertaal deze pagina 5 jul. 2012 - 3.6bn deal ends four-year saga of mutual takeover bids. ... Four years after Porsche made a bid to buy out Volkswagen, the shoe is on the other ...

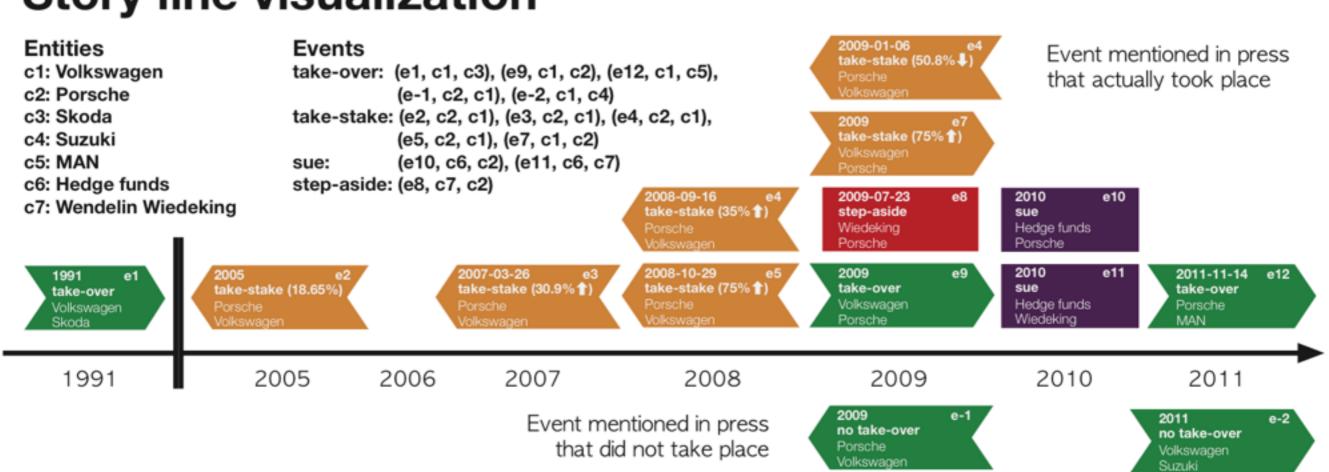
http://www.google.com/trends/explore#q=Volkswagen%2BTakeover



Measures volume of news in relation to topic but NOT the volume of *change*!

Recording events as stories

Story line visualization



What we do not want

- Result lists with too many documents to read:
 - duplication,
 - incomplete,
 - new mixed with old,
 - inconsistent,
 - biased,
 - opinionated

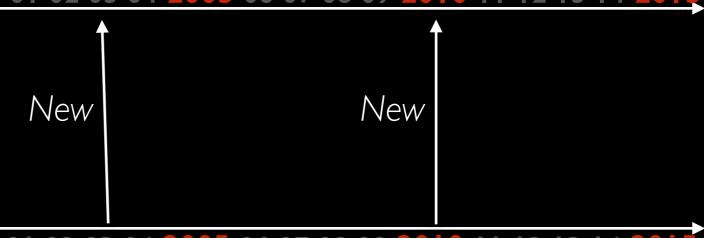
What we do want

- Event centric instead of document centric
- Instances instead of repetitive mentions:
 - changes in the world instead of talk in news
 - aggregates from many sources and combines in single representation

VOLUME OF CHANGE



1995 96 97 98 99 2000 01 02 03 04 2005 06 07 08 09 2010 11 12 13 14 2015



1995 96 97 98 99 2000 01 02 03 04 2005 06 07 08 09 2010 11 12 13 14 2015





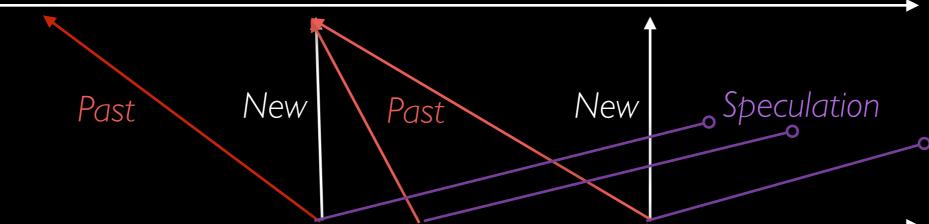




VOLUME OF CHANGE







995 96 97 98 99 2000 01 02 03 04 2005 06 07 08 09 2010 11 12 13 14 201

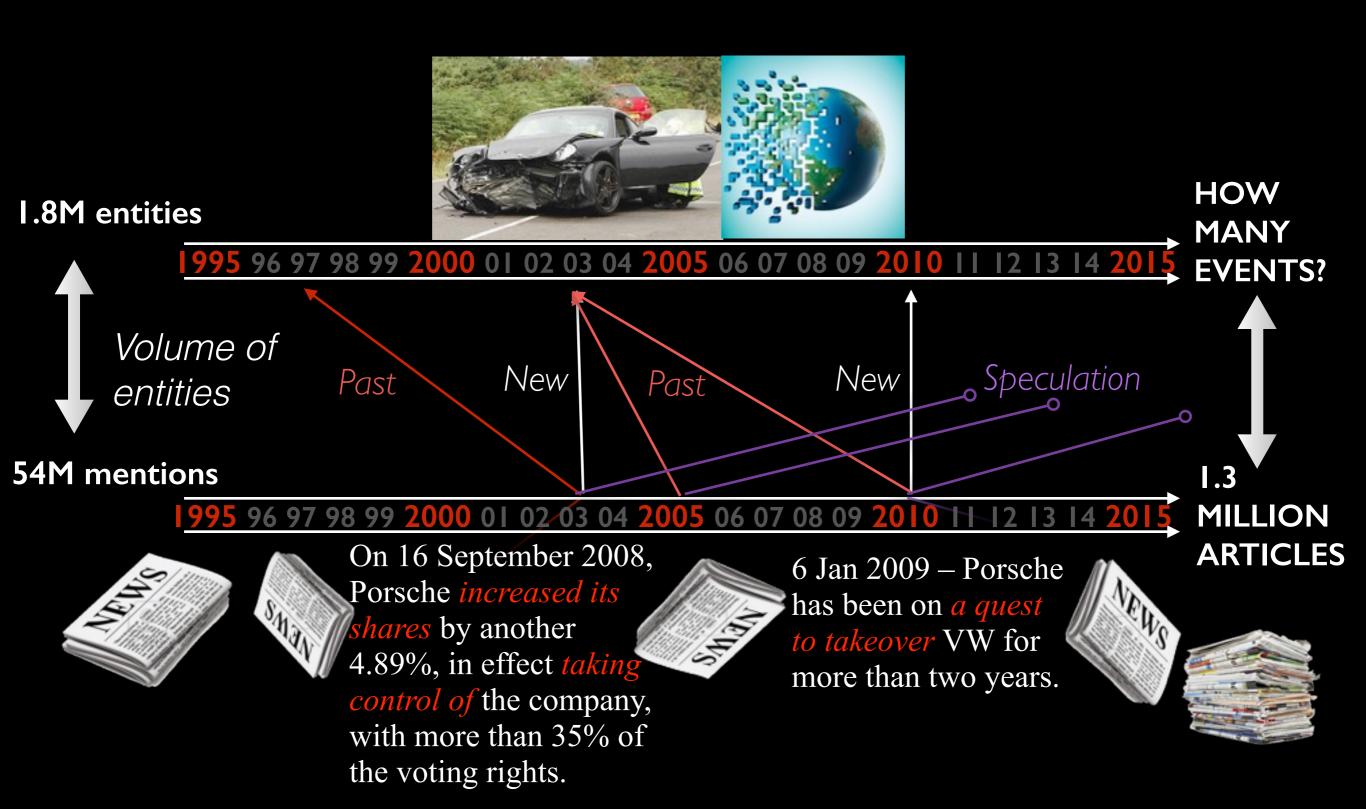


On 16 September 2008, Porsche *increased its* /shares by another 4.89%, in effect taking control of the company, with more than 35% of the voting rights.

6 Jan 2009 – Porsche has been on *a quest* to takeover VW for more than two years.



VOLUME OF CHANGE



What if computers could read the news?



NewsReader (ict316404)

- Reading Technology to process massive streams of news from many different sources in 4 languages (English, Dutch, Spanish and Italian):
 - Recording the <u>changes</u> in the world as they are told in the media over long periods of time → **history**recorder.
 - What happened, where and when, who was involved.
 - Who made what statement, where do sources agree and disagree: *provenance*!

17 Jun 2013

Porsche family buys back 10pc stake from Qatar

Descendants of the German car pioneer Ferdinand Porsche have bought back a 10pc stake in the company that bears the family name from Qatar Holding, the investment arm of the Gulf State's sovereign wealth fund.

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WHO:

http://dbpedia.org/page/Category:Porsche_family http://dbpedia.org/page/Category:Qatarholding http://dbpedia.org/page/Category:PorscheSE

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WHAT: buy_back

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http://english.alarabiya.net/en/business/banking-andfinance/2013/06/17/Qatar-Holding-sells-10-stake-in-Porsche-to-family-shareholders.html

Monday, 17 June 2013

Qatar Holding sells 10% stake in Porsche to founding families

Qatar Holding, the investment arm of the Gulf state's sovereign wealth fund, has sold its 10 percent stake in Porsche SE to the luxury carmaker's family shareholders, four years after it first invested in the firm.

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WHO:

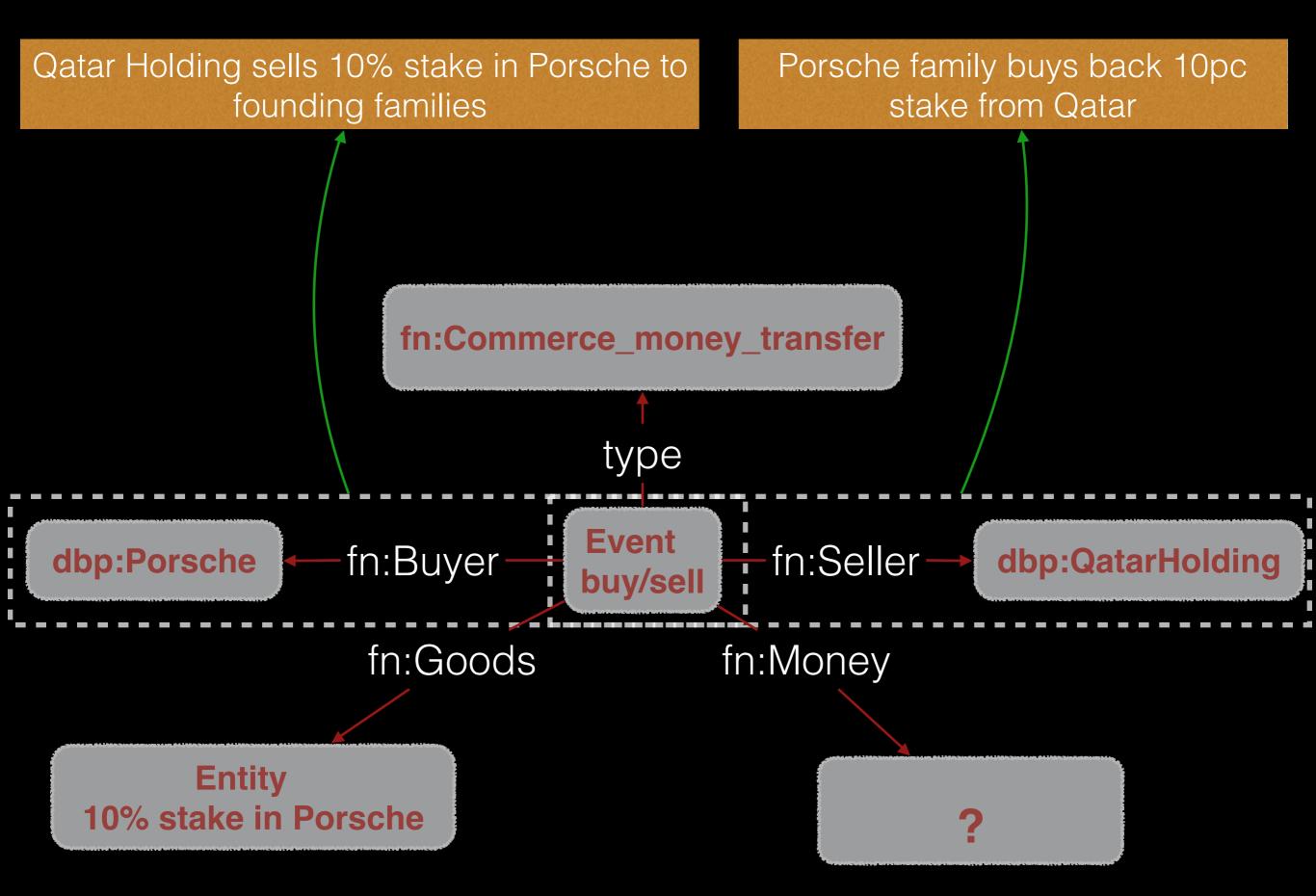
http://dbpedia.org/page/Category:Porsche_family http://dbpedia.org/page/Category:Qatarholding http://dbpedia.org/page/Category:PorscheSE http://english.alarabiya.net/en/business/banking-and-finance/2013/06/17/Qatar-Holding-sells-10-stake-in-Porsche-to-family-shareholders.html

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WHAT: sell



- http://news.sky.com/story/1104755/porsche-family-buys-back-stake-from-qatar
 - Monday 17 June 2013: Descendants of German automobile entrepreneur Ferdinand Porsche have bought back a stake in their holding company from its Middle Eastern owners.
 - The family bought the shares back from Qatar Holding, the investment arm of the Gulf state's sovereign wealth fund.
- http://automiddleeast.com/2013/06/18/news/qater-holding-sells-stake-in-porsche-back-to-founding-families
 - Jun 18, 2013: Porsche families buy back Qatar Holding shares
 - The Porsche and Piëch families have bought back the ten per cent of ordinary shares of Porsche Automobil Holding SE (Porsche SE) held by Qatar Holding Germany GmbH.
- http://www.swfinstitute.org/swf-news/qatar-holding-sells-10-stake-in-auto-investment-to-porsche-and-piech-families-44547/
 - June 17, 2013: Qatar Holding Sells 10% Stake in Auto Investment to Porsche and Piech Families
- http://www.reuters.com/article/2013/06/17/qatar-porsche-volkswagen-idUSL5N0ET0L720130617
 - Mon Jun 17, 2013: Qatar sells back 10 pct Porsche stake to founding families
 - Qatar Holding, the investment arm of the Gulf state's sovereign wealth fund, has sold its 10
 percent stake in Porsche SE to the luxury carmaker's family shareholders, four years after it first
 invested in the firm.

From mentions to instances

WORDS

Qatar[2] Holding[2] sells[8] 10% stake[5] in Porsche[10] to founding[3] families[8]



2*2*8*5*10*3*8=38400 concept combinations

CONCEPTS dbp:Qatar_Investment_Authority...SELL/BUY..STAKE.... dbp:Porsche



RELATIONS

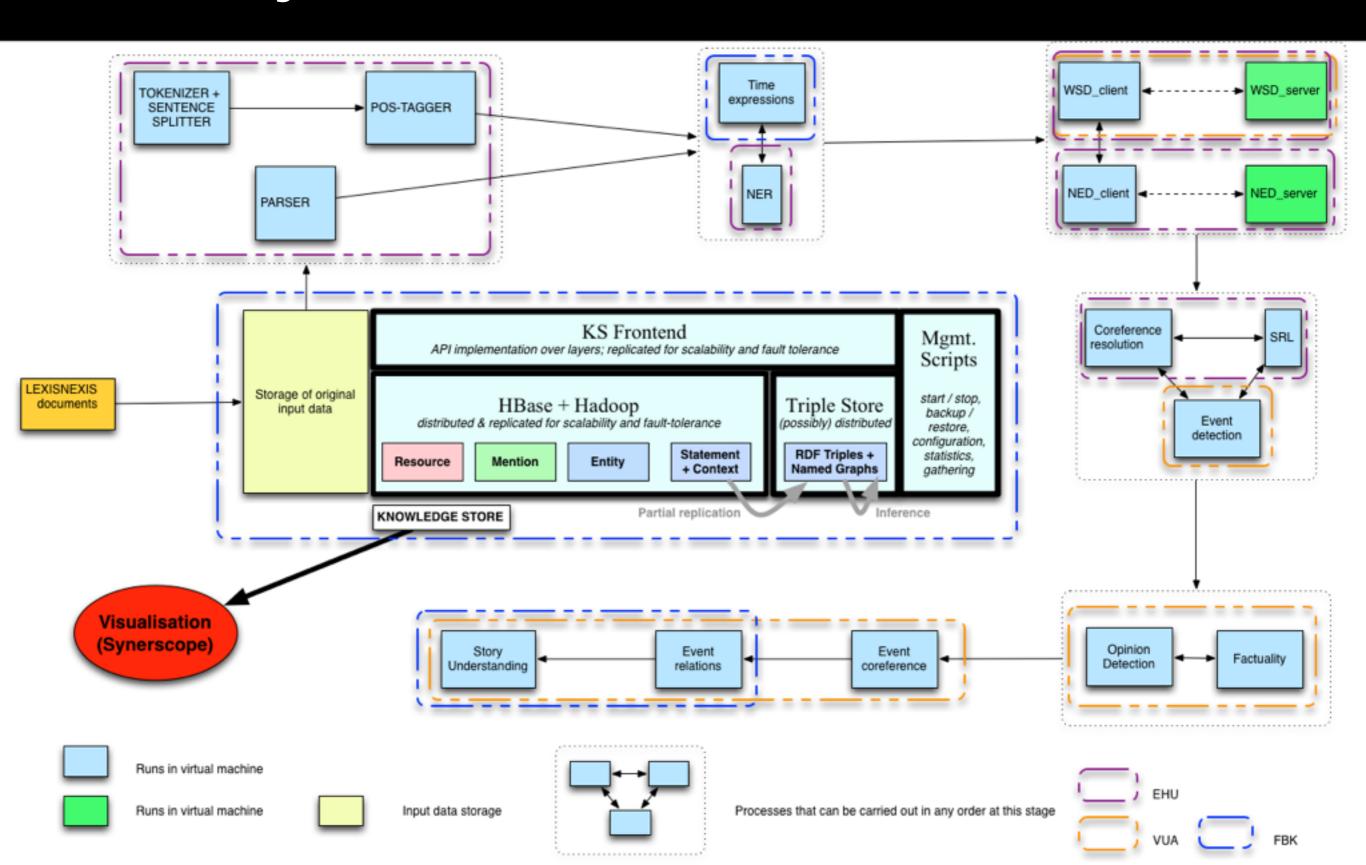
TIME=2013-06-17
(fn:Commerce, fn:Seller, QATAR.)
(fn:Commerce, fn:Buyer, PORSCHE)
(fn:Commerce, fn:Goods, 10%STAKE)



PROVENANCE SOURCE

english.alarabiya.net → STATEMENT → CERTAIN

System Architecture



	EVENT
uri	nwr:data/cars/56CM-6SR1-F06S-P2CT.xml#ev20
a	fn:Commerce_sell , eso:Selling
rdfs:label	buy, purchase
gaf:denotedBy	nwr:data/cars/545V-2TY1-JD3N-53CV.xml#char=1220,1225
	nwr:data/cars/546D-NGV1-JD3N-50PY.xml#char=608,613
	ENTITY
uri	dbp:Atlanta
rdfs:label	Atlanta
gaf:denotedBy	nwr:data/cars/5473-WWF1-DYTM-941H.xml#char=1827,1834
uri	dbp:Grey_Global_Group
rdfs:label	Grey Group
gaf:denotedBy	nwr:data/cars/56WF-K4R1-JCBD-Y42X.xml#char=1655,1665
uri	nwr:data/cars/entities/Parker_Brothers_Choppers>
a	nwrontology:ORGANIZATION
rdfs:label	Parker Brothers Choppers
gaf:denotedBy	nwr:data/cars/545K-P881-JBF5-T4WB.xml#char=0,24
	nwr:data/cars/545K-P881-JBF5-T4WB.xml#char=137,161

instances

mentions

	TIME
uri	nwr:data/cars/56M7-BG31-JCRR-052F.xml#tmx4
a	time:Interval
rdfs:label	Nov.
gaf:denotedBy	nwr:data/cars/56M7-BG31-JCRR-052F.xml#char=1138,1142
time:inDateTime	nwr:time/20111105
uri	nwr:data/cars/5461-MC31-DYRS-T1VR.xml#dct
a	time:Interval
rdfs:label	11/05/11 12:00 AM
gaf:denotedBy	nwr:data/cars/5461-MC31-DYRS-T1VR.xml#dctm
time:inDateTime	nwr:time/20111105
uri	http://www.newsreader-project.eu/time/20111105
a	time:DateTimeDescription
time:day	05"^^ <http: 2001="" www.w3.org="" xmlschema#gday=""></http:>
time:month	"11"^^ <http: 2001="" www.w3.org="" xmlschema#gmonth=""></http:>
time:year	"2011"^^ <http: 2001="" www.w3.org="" xmlschema#gyear=""></http:>
time:unitType	time:unitDay

mention

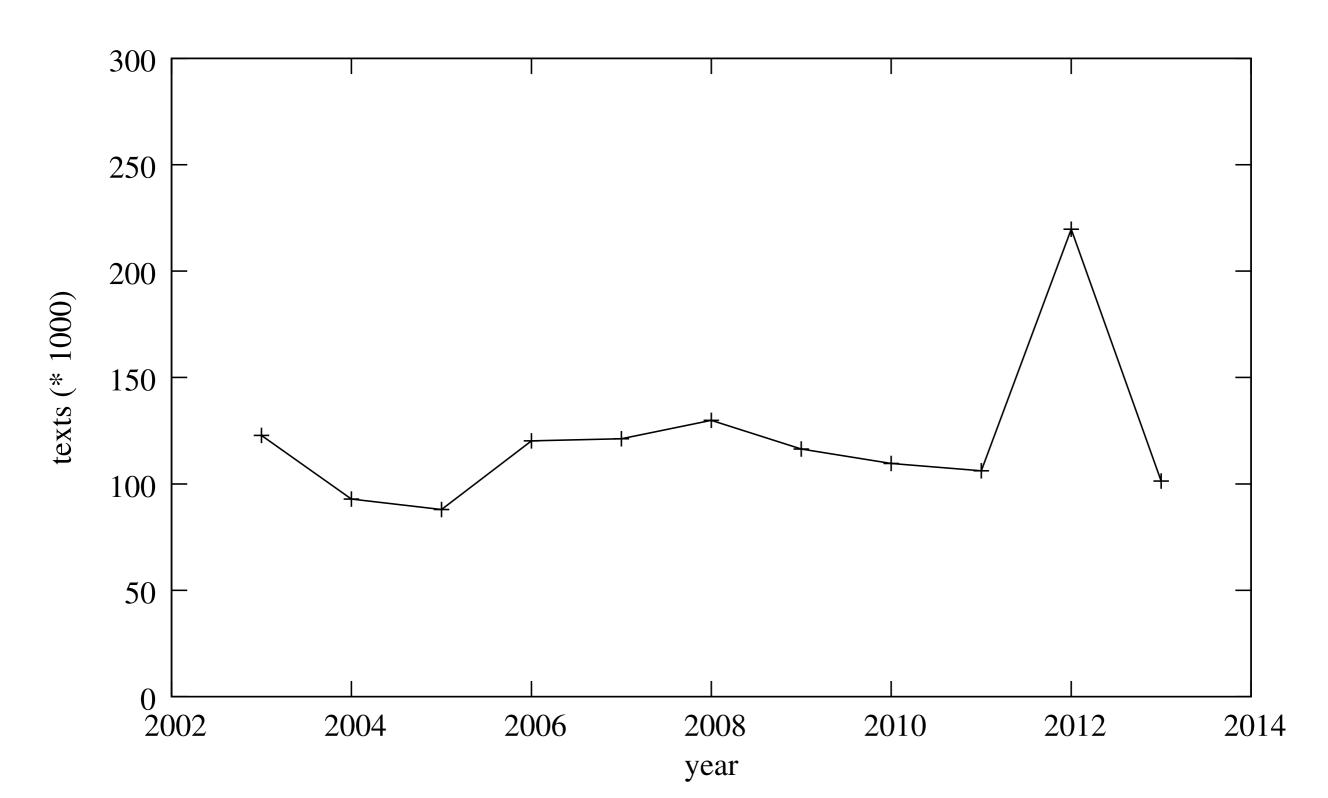
instance

RELATIONS OR TRIPLES
nwr:data/cars/56CM-6SR1-F06S-P2CT.xml#ev20
sem:hasTime
nwr:data/cars/56M7-BG31-JCRR-052F.xml#tmx4
gaf:denotedBy nwr:data/cars/545V-2TY1-JD3N-53CV.xml#char=1220,1345
nwr:data/cars/56CM-6SR1-F06S-P2CT.xml#ev20
Commerce_sell@Goods
dbp:Ford_Ranger
gaf:denotedBy nwr:data/cars/545V-2TY1-JD3N-53CV.xml#char=1220,1270
nwr:data/cars/56CM-6SR1-F06S-P2CT.xml#ev20
Commerce_sell@Buyer
dbp:Grey_Global_Group
gaf:denotedBy nwr:data/cars/545V-2TY1-JD3N-53CV.xml#char=1210,1225
nwr:data/cars/56CM-6SR1-F06S-P2CT.xml#ev20
Commerce sell@Seller
dbp:Doug_Dickson
gaf:denotedBy nwr:data/cars/545V-2TY1-JD3N-53CV.xml#char=1220,1240

mentions

Today's data set 1.3M English news articles Automotive Industry 2003-2013

10 years Automotive industry 1.3M articles



10 years Automotive industry

1.3M Articles	Mentions	Instances
Objects	54M (18% person, 16% location, 22% organization)	1.8M (36% person, 15% location, 49% organiization)
Events	100M	19M
Time	16M	
Relations	34M (69% participant, 31% time)	27M (45% actor, 5% place, 50% time)
Background		96M
Inferred		1.7M

	in DBpedia	generated	Total	% DBpedia
linked Persons	121,834	530,257	652,091	18.68%
linked Organizations	59,032	814,088	873,120	6.76%
linked Locations	86,236	188,130	274,366	31.43%

Entities

Organizations	Number of Mentions	Persons	Number of Mentions	Locations	Number of Mentions
dbpedia:Toyota	130,783	dbpedia:Abraham_Lincoln	68,904	dbpedia:England	105,342
dbpedia:General_Motors	77,420	dbpedia:Andrew_Johnson	26,306	dbpedia:Japan	102,530
dbpedia:Ford_Brasil	69,222	dbpedia:Barack_Obama	19,761	dbpedia:United_States	98,872
dbpedia:Republican_Party_(United_States)	53,106	dbpedia:Presidency_of_Barack_Obama	16,037	dbpedia:Europe	97,154
dbpedia:Volvo	51,897	dbpedia:United_Nations	12,819	dbpedia:Taiwan	86,450
dbpedia:Democratic_Party_(United_States)	50,768	dbpedia:Zachary_Taylor	11,713	dbpedia:India	84,941
dbpedia:Volkswagen	48,748	dbpedia:George_WBush	10,891	dbpedia: Australia	72,135
dbpedia:Saab_Group	45,346	dbpedia:Gray_Davis	10,670	dbpedia:Germany	56,223
dbpedia:UEFA	40,692	dbpedia:Ron_Paul	10,140	dbpedia:Canada	51,164
dbpedia:Chrysler	39,572	dbpedia:List_of_Heroes_characters	9,968	dbpedia:Chinese_people	50,120
dbpedia:Renault	39,443	dbpedia:Gerry_Anderson	9,888	dbpedia: Americas	48,707
dbpedia:UD_Trucks	37,719	dbpedia:John_Howard	9,206	dbpedia:Russia	45,643
dbpedia:Porsche	32,863	dbpedia:Walter_Scott	9,198	dbpedia:Empire_of_Japan	36,517
dbpedia:Daimler_AG	30,555	dbpedia:George_Washington	8,814	dbpedia:France	36,024
dbpedia:Honda	29,650	dbpedia:Ralf_Schumacher	8,765	dbpedia:Billboard_200	30,834
dbpedia:Toyota_Motorsport_GmbH	28,513	dbpedia:Carlos_Ghosn	8,497	dbpedia:London	28,553
dbpedia:Opel	28,164	dbpedia:John_GRobinson	7,866	dbpedia:China	27,342
dbpedia:Volkswagen_Group	26,953	dbpedia:Lewis_Hamilton	7,742	dbpedia:Nebraska	27,141
dbpedia:BMW	26,854	dbpedia:Trecia-Kaye_Smith	7,728	dbpedia:Detroit	26,778
dbpedia:Suzuki	25,260	dbpedia:Fernando_Alonso	7,702	dbpedia:New_York	26,555
dbpedia:Ford_Germany	25,030	dbpedia:John_Adams	7,091	dbpedia:Second_Spanish_Republic	25,175
dbpedia:Fiat	24,280	dbpedia:Robert_ELee	7,059	dbpedia:Spain	23,984
dbpedia:Jaguar_Cars		dbpedia:James_Baker	7,031	dbpedia:Malaysia	23,972
dbpedia:Toyota_Manufacturing_UK	22,996	dbpedia:Celtic_art	6,868	dbpedia:Tsardom_of_Russia	23,820
dbpedia:Proton_(automobile)	20,994	dbpedia:Don_Murphy	6,433	dbpedia:Italy	22,569
dbpedia:Mazda	20,438	dbpedia:David_Cameron	6,219	dbpedia:Chicago	21,880
dbpedia:Audi	20,330	dbpedia:List_of_Sons_of_Anarchy_char		dbpedia:Michigan dbpedia:Australia_national_women'	21,785
dbpedia:Mercedes-Benz	19,510	dbpedia:Lyle_Campbell	5,911	s_cricket_team	21,617
dbpedia:Airbus	18,481	dbpedia:Jock_Young	5,749	dbpedia:North_America	21,566

Events

384,376

383,784

343,819

310,468

278,232

202,230

189,464

177,627

175,942

172,021

167,822

164,483

155,987

145,578

141,648

141,264

139,028

133,788

133,133

128,015

120,628

120,607

115,366

114,894

109,118

103,884

99,681

99,681

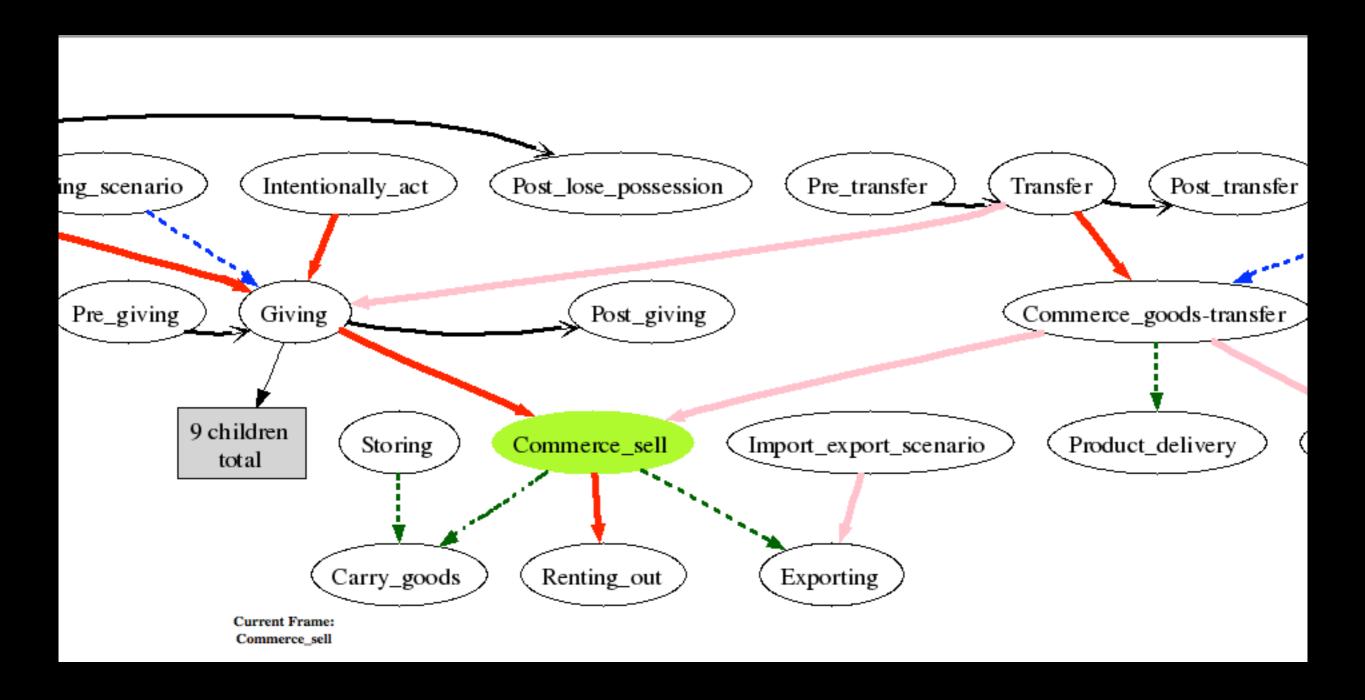
97,277

nts words	Top 50 FrameNet frames
182,350	Change_position_on_a_scale
175,769	Bringing
151,529	Behind_the_scenes
128,199	Arriving
127,517	Getting
123,910	Cotheme
110,551	Intentionally_create
105,031	Experiencer_obj
93,639	Placing
92,195	Cause_change_of_position_on_a_scale
89,864	Commerce_sell
89,851	Change of leadership
87,220	Cause to start
81,707	Expansion
79,504	Scrutiny
78,340	Manufacturing
77,875	Departing
77,098	Assistance
75,082	Body_movement
74,273	Giving
73,761	Closure
73,727	Cause_harm
72,457	Text_creation
70,215	Cause_expansion
66,245	Commerce_buy
66,231	Self motion
64,134	Building
62,753	Sending
62,751	Residence
	182,350 175,769 151,529 128,199 127,517 123,910 110,551 105,031 93,639 92,195 89,864 89,851 87,220 81,707 79,504 78,340 77,875 77,098 75,082 74,273 75,082 74,273 75,082 74,273 75,082 74,273 75,082 76,082 77,098 75,082 76,082 76,082 77,098 76,082 77,098 76,082 77,098 77,098 77,098 75,082 74,273 761 76,215 66,245 66,231 64,134 62,753

Top 31 ESO event typ	es
Translocation	801,843
Getting	786,961
Giving	598,325
QuantityChange	556,580
Transportation	426,019
Removing	394,293
Arriving	299,490
Placing	201,525
Selling	173,934
Taking	167,608
Leaving	139,028
BeingAtAPlace	128,585
JoiningAnOrganization	112,645
Buying	109,118
LeavingAnOrganization	85,231
Separating	70,799
InEmployment	69,991
Killing	66,636
HavingInPossession	58,216
Paying	57,289
Destroying	55,222
BeingLeader	38,189
Distribution	29,018
Lending	24,155
Merging	23,500
Stealing	22,246
Escaping	16,047
Installing	15,466
Renting	12,881
RentingOut	5,314
BeingInExistence	67

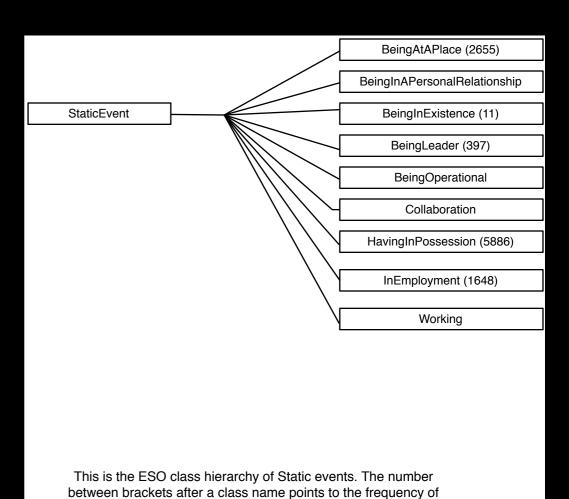
FrameNet

https://framenet.icsi.berkeley.edu/fndrupal/



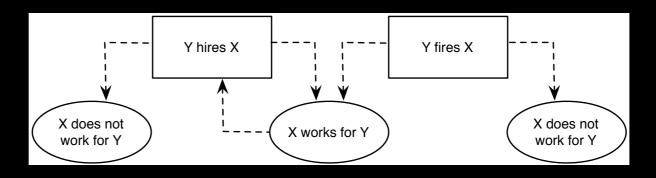
Taking (167608) Stealing (22246) Borrowing Getting (786961) Renting (12881) Entity Lending (24155) Giving (598325) ChangeOfPossession Renting_out (5314) Selling (173934) Exporting FinancialTransaction Buying (109118) Importing Paying (57289) Investing Transportation (426019) Translocation Motion (801843) Distribution (29018) Escaping (16047) Leaving (139028) Arriving (299490) Event Removing (394293) Placing (201525) Installing (15466) Creating Constructing InternalChange Manufacturing Damaging Injuring Destroying (55222) Killing (66636) QuantityChange (556580) ChangingShape Separating (70799) Merging (23500) SocialInteraction ChangeOfRelationship IntentionalEvent Meeting Attacking Replacing JoiningAnOrganization (112645) OrganizationalEvent LeavingAnOrganization (85231) ChangeOfLeadership This is the ESO class hierarchy of Dynamic ChangingPosition events. The number between brackets after a InOrganization class name point to the frequency of this class on mention level in the Car data set.

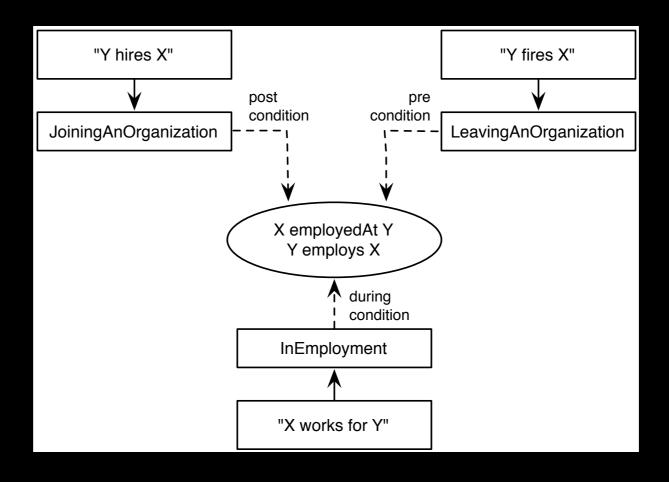
Event & Situation Ontology



this class on mention level in the Car data set.

Event Reasoning





http://www.newsreader-project.eu/domain-ontology/

JoiningAnOrganization

The subclass of OrganizationalEvent where a person joins an organization

SUMO classes: JoiningAnOrganization

FrameNet frames: Get_a_job, Hiring

Mappings of ESO roles to FrameNet frame entities:

ESO Role	FN frame entities	
employment-employee	Employee	
employment-employer	Employer	

LeavingAnOrganization

The subclass of OrganizationalEvent where a person leaves an organization

SUMO classes: LeavingAnOrganization

FrameNet frames: Firing, Quitting

Mappings of ESO roles to FrameNet frame entities:

ESO Role	FN frame entities	
employment-employee	Employee	
employment-employer	Employer	

Meeting

The subclass of IntentionalEvent where people intentionally come together for some purpose.

SUMO classes: Meeting

FrameNet frames: Assemble, Come_together, Social_event

ESO Reasoning results

	_
ESO Roles (all)	
translocation-theme	415,595
possession-owner_1	336,369
possession-owner_2	282,192
possession-theme	241,486
translocation-goal	156,616
quantity-theme	152,140
translocation-source	151,362
employment-employer	54,263
atPlace-theme	35,790
employment-employee	30,146
atPlace-location	29,796
destroying-theme	20,417
possession-owner	16,607
merging-theme_1	1,753
separating-theme_1	1,647
separating-theme_3	1,600
merging-theme_3	443
merging-theme_2	254
exist-theme	12
separating-theme_2	4

Type of triples instantiated in Situations	
hasInPossession	232.596
notHasInPossession 228.436	
atPlace	120.789
exist	52.206
employedAt	11.71
notEmployedAt	9.704
TOTAL	655.441

What connects two restaurants?

Schrempp has bought the venerable Herzl, a rustic beer garden and tavern, and is having it remodeled. The inn is near Gabriele, an elite Italian restaurant that Schrempp's wife, Lydia, has opened.



Gäste nörgeln über Pizza vom Ex-Porsche-Chef



Wendelin Wiedeking (61) eröffnete sein Lokal im August. Die Gastro-Kette gibt's auch in Karlsruhe und Ludwigshafen