# Vertical Search Works

Assuring
Broad Quality in Large-Scale Ontologies
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# Assuring broad quality in large-scale ontologies



- Who are we and what do we do?
- Our ontology and ontology management tools
- Our search engine
- Ontology and product evaluation

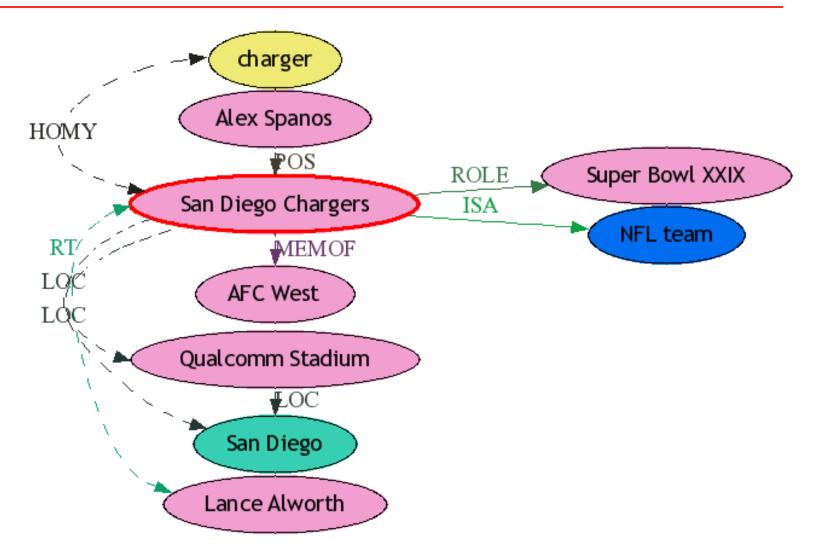
## Who We Are



- Vertical Search Works was created in 2009
- Merger from First Light ERA and Convera (formerly Excalibur Technologies)
- Around 150+ employees
- 17 engineers (engineering & ontology group)
- Engineering located in Carlsbad, Sales in NY
- Two core businesses:
  - Semantic vertical search
  - Contextual advertising

# **Ontology: Visualization and Browsing**





# **Ontology: Flat file Representation**



**SYNSET**: kec.004KN (San Diego Chargers)

**HOMY**:cpr.006RC (charger) **ISA**:pct.01QPV (NFL team)

**LOC**: kec.00MEM (Qualcomm Stadium)

**LOC**:usg.1661377 (San Diego) **MEMOF**:kec.CCI8S (AFC West)

**ROLE**: kec. CCFFX (Super Bowl XXIX)

RT:kec.005ZQ (Lance Alworth)

**HOMEPAGE**:http://www.chargers.com/

\*,url

**UF**:San Diego Chargers

\*,PN,gui

**UF**:Chargers

\*,PN,case

**SYNSET**:pct.CBOA4 (waffle)

**BT**:cpr.CBIEJ (breakfast food)

BT:pct.0009L (baked good)

**HOMY**:men.00UB7 (geomys)

RT:cpr.003N4 (waffle iron)

RT:kec.CA9SS (Gaufres d'or)

**UF**:waffle

en,gui

**UF**:gaufre

fr,gui

**UF**:gaufrette

fr

**UF**:wafle

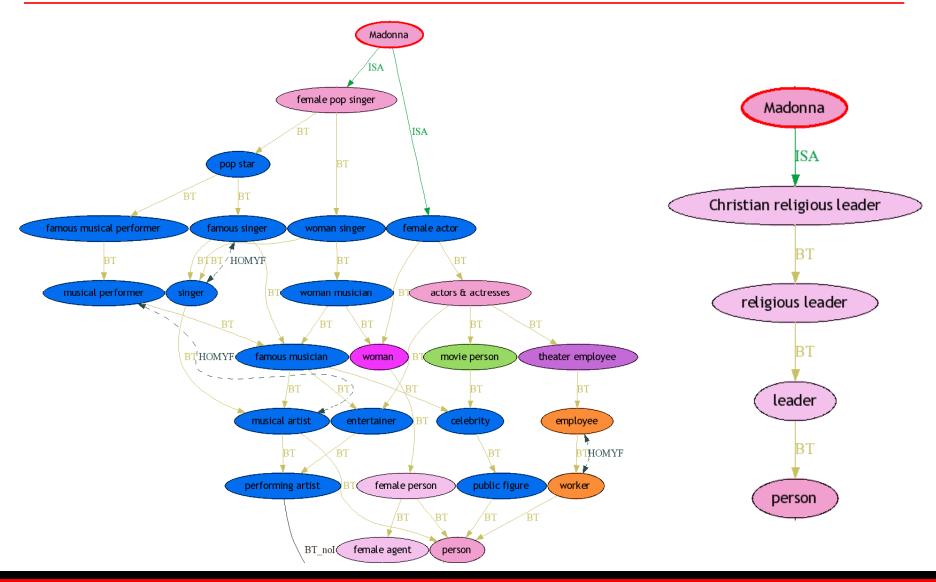
es,gui

**UF**:*gofre* 

es

# Two synsets with the expression "Madonna"

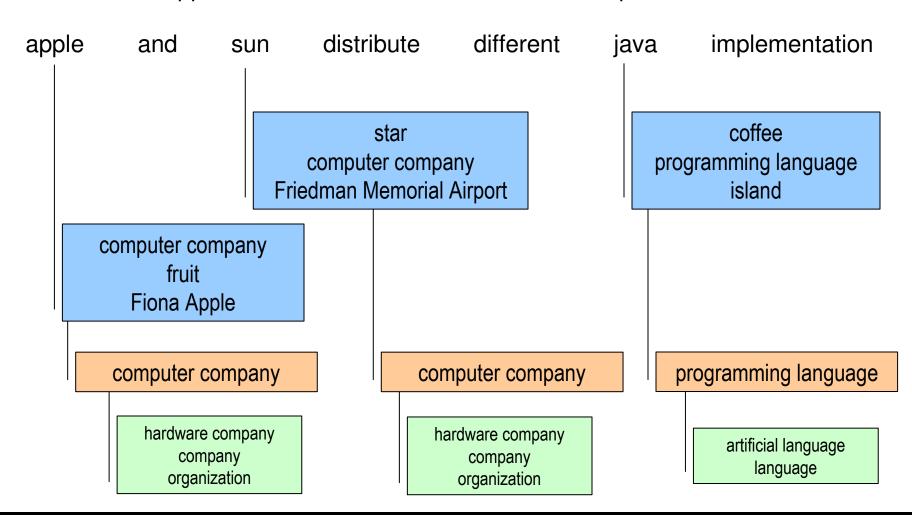




# Using the ontology to disambiguate



"Apple and Sun distributed different Java implementations."

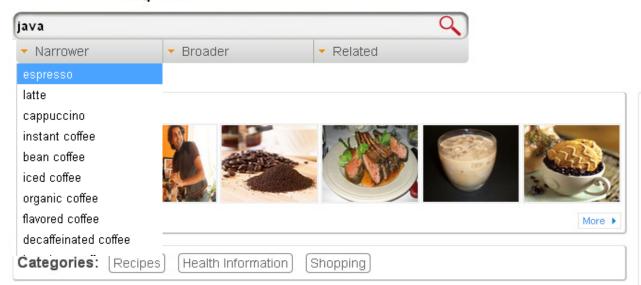


# Using the ontology for search





### VS₄ Food



### Web Results

Coffee, Perfect Cup of Coffee, How To Make Perfect Coffee, How To Make Coffee, Coffee Cupping, How To Cup Coffee

Coffee - Organic Coffee for Your Health and the Environment. To gain a better understanding of what the term "Organic Coffee" really means we have put together this guide ...

whatscookingamerica.net

### How To Make Great Espresso

college as a mean of keeping awake long enough to study. He used to drink **instant coffee** and drip **coffee**. ... An interesting fact is that hazelnut **flavored coffee** is one of the most popular flavors among consumers followed by Irish cream. ...



### The Perfect Cup of Coffee

Stop by today for high quality beans roasted in small batches to just the right degree of roast.

petalumacoffee.com



### Organic Coffee

Enjoy a delicious cup of all natural coffee every morning! Click here to shop online today!

fourgreensteps.com



### Wedding Special Coffee Roast

Let our specialty wedding coffee be the life of the party! Only \$3 per person with no minimum!

viennacoffeecompany.com

VSW FeatureLink

.....

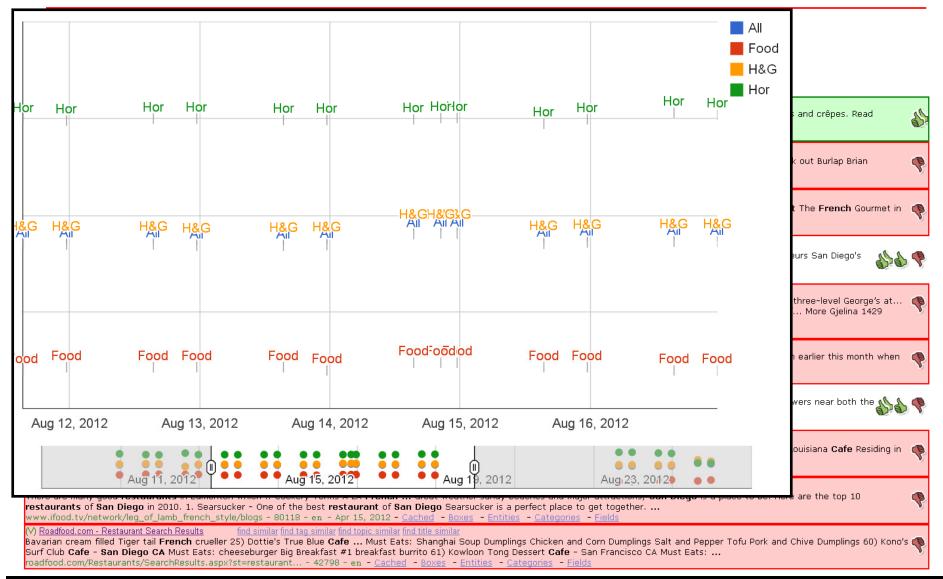
# **Ontology and Architecture Evaluation Cycle**



- Before check-in, locally
  - Validation: Automated, syntax and inherent checks
- Within the hour, from source control (CruiseControl)
  - Validation
- Nightly build and index
  - Validation
  - Search Quality: Automated, black box, TREC methodology
  - Unit tests: Automated, glass box, semantic, regression and functional
- Fortnightly push to production
  - Validation, search quality, unit tests
- Monthly QA cycle
  - Manual desk check

# Measuring search quality





# **Conclusion**



- Large-scale ontology
  - Hyper-linked browser
  - Flexible visualization
- Ontology used for
  - Disambiguation
  - Search drilldown
  - Contextual advert matching
- Throughout development cycle
  - Intrinsic validation
  - Black box testing based on TREC
  - Glass box regression and function tests
  - Manual desk check





VS4Food.com

VS4Family.com

VS4Entertainment.com

VS4Gardening.com

VS4HomeandGarden.com

VS4Woodworking.com