

Food Product Ontology

Initial Implementation of a Vocabulary for Describing Food Products

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What's an Ontology

A **model** of the world

- Introduces **vocabulary** relevant to domain
 - includes names of classes and relationships
- Consists of two parts
 - set of **axioms** describing **structure** of the model
 - set of **facts** describing some particular concrete situation

Axioms

Class: Person

Data property: fullName

Data property: age

Class: Adult

equivalent to: Person with age ≥ 18

Class: Child

equivalent to: Person with age < 18

Facts

Individual: Homer

type: Adult

age: 40

fullName: "Homer Simpson"

Individual: Bart

type: Child

age: 10

fullName: "Bart Simpson"



Use of Ontologies:

Structured data on the Web

~5.64% websites have structured data

- ~21% - RDFa

- ~6.1% - Microdata

- ~14.18% - Microformats

RDFa and Microformats rely on ontologies

Why do we need one more?

There are GoodRelations and several ontologies for wine, pizza and etc.

We can describe products, but we can't add information about ingredients, energy value and etc.

Use cases

The Food Product Ontology can be used on...

- A. a retailer's web site
 - concrete instances, a brief description
- B. a manufacturer's web site
 - product specs, a detail description
- C. an institution's web site
 - ingredients (E-additives etc.)

Food Product Ontology

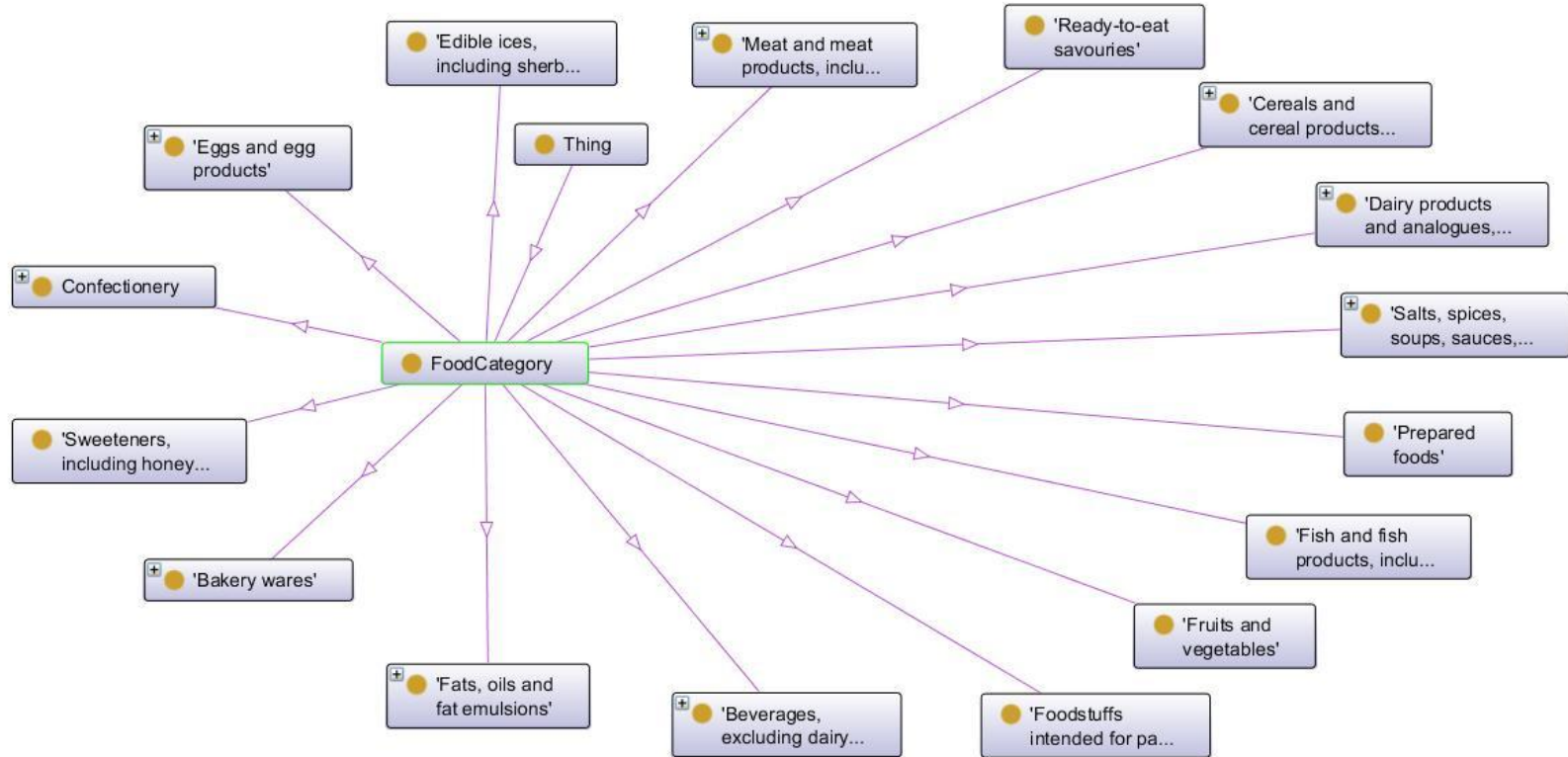
- is an extension of GoodRelations,
- 5 main classes,
- more than 7 properties,
- more than 300 classes describing food categories (defined by the CODEX Alimentarius)

GoodRelations...



- is an ontology defining data structures for e-commerce,
- is industry-neutral, suitable for tickets, services, electronics, cars and other types of goods,
- has main classes: Business Entity, Offering, Product or Service, Location
- ...

Food categories



Example of a food product

```
<4607046575613> a food:Food ;  
  gr:name "Sunnyside Farms Plain Nonfat  
          Yogurt" ;  
  gr:hasEAN_UCC-13 "4607046575613" ;  
  food:fatPer100g "0"^^xsd:double ;  
  food:proteinsPer100g "21"^^xsd:double ;  
  food:containsIngredient food:E432 .
```



Evaluation (1)

Who sells dried fruits and on which Web pages can I get more information on respective offerings?

```
SELECT ?business ?uri WHERE {  
    ?business gr:offers ?offering .  
    ?offering gr:includesObject ?TypeAnQuantityNode .  
    ?TypeAnQuantityNode gr:typeOfGood ?product .  
    ?product a food:Food ;  
    a food:DriedFruit ;  
    rdfs:seeAlso ?uri .  
}
```

Evaluation (2)

Who sells bread and bakery wares without E-additives?

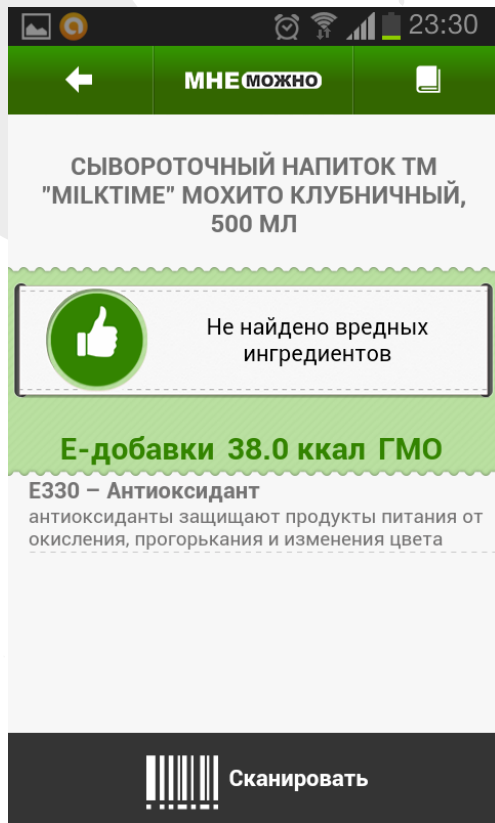
```
SELECT ?business ?uri WHERE {  
  ?business gr:offers ?offering .  
  ?offering gr:includesObject ?TypeAndQuantityNode .  
  ?TypeAndQuantityNode gr:typeOfGood ?product .  
  ?product a food:Food ;  
  a food:BreadAndOrdinaryBakeryWares ;  
  rdfs:seeAlso ?uri .  
  ?eadditive a food:EAdditive .  
  FILTER NOT EXISTS { ?product food:containsIngredient ?eadditive }  
}
```

Application of Ontology (1)

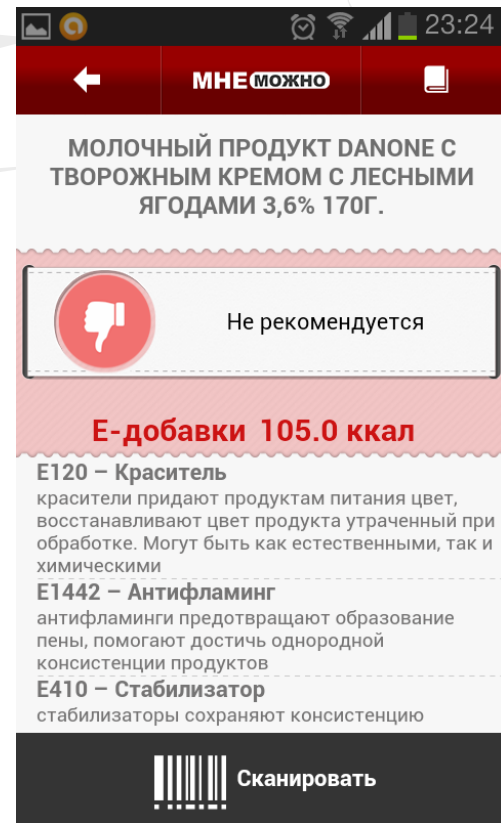
It's initially built for MneMojno mobile app for representing all information about food products in RDF.

MneMojno provides a user with additional information about food products helping to select better products.

Application of Ontology (2)



- a ten-point rating,
- explanation of labels,
- laboratory results,
- and etc.



Future Work

1. An integration with a common ontology representing food in general,
2. A localization of the ontology to different languages or even make it multilingual with use of the Universal Networking Language (UNL)

Thank you!

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