

# Food Ontology: Ontology for Describing Food Products

Maxim Kolchin, Dmitry Zamula

National Research University of Information Technologies, Mechanics and Optics  
Saint Petersburg, Russia  
{kolchinmax, zamula.dmitry}@gmail.com

## Abstract

In the paper we introduce intermediate results of building domain ontology for describing food and food products. The ontology we're building extends the most powerful ontology for product and service domains GoodRelations which is used by big companies such as Google, Yahoo, Best Buy and others. We give an overview of the relevant conceptual entities and relationships in the domain.

**Index Terms:** Ontology engineering, Ontology building, Semantic Web.

## I. INTRODUCTION

The current stage of evolution of information technology leads to the accumulation of a large amount of information displayed in various forms of perception. There is the problem of managing large volumes of data, expressed in the absence of the possibility of reusing existing data sets by third-party applications due to the uncertainty and fragmentation of the data structure. One approach to solving this problem - using Semantic Web technologies, in particular, using of ontologies, for formalizing a domain of knowledge. Forming a data structure through classes and relations between them, the user can describe a set of data is strictly correlated with a given structure. With unification and subsequent distribution of this structure in the form of ontologies, there is possibility of integration third-party data sets into a single information space.

Today, the most popular language for defining ontologies is OWL [1] and to provide information - the model RDF [2].

The purpose of this paper is to present the first version of Food Ontology used in the MneMojno project (<http://www.mnemojno.ru>) and initiate collaboration with other interested parties.

## II. MAIN PART

In this paper we shortly introduce an ontology of food and food products particularly which is being developed for MneMojno project to structure its knowledge base of food products. The motivation for building a new ontology is the lack of reusable, non-toy ontology for food product domain.

The ontology extends the most powerful ontology for describing all of the details of products and services GoodRelations ontology[3], here in after referred to as the core ontology. Below, we give an overview of the relevant conceptual entities and types of relationships that extend the core ontology for food product domain. A visualization of classes and properties in form of an entity-relationship diagram is shown on Fig. 1.

The most important conceptual elements of the domain are as follows:

*A. Product or Service*

A class from the core ontology describing an actual product, product makes and models or classes of actual products that are similar in function or nature.

*B. Food*

Anything that can be eaten or drunk: a basic food (i.e. milk or a banana), a dish (a food made with a recipe) and a food product (i.e. a bar of chocolate). In Food Ontology, Food is a subclass of Product or Service class, so it has all properties the parent class has, such as a reference to the manufacturer of the product, the Global Trade item Number (GTIN-14).

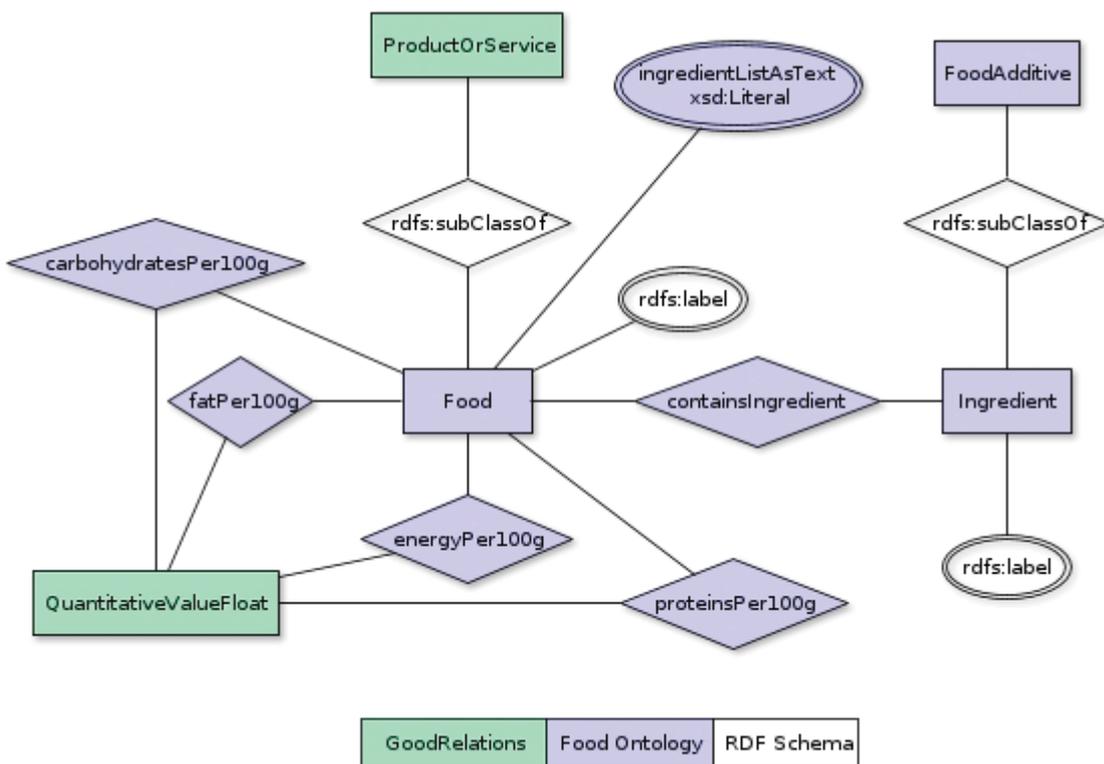


Fig. 1. Conceptual Model of the Food Ontology

*C. Ingredient*

An ingredient of a dish or a food product, i.e. a sugar or an artificial flavor. It has several subclasses describing different types of ingredients, as Food additive.

III. CONCLUSION

In this paper was introduced the Food Ontology, as an extension of GoodRelations, aimed at the description of products and services (used primarily in online stores). Direction of the new Food Ontology expressed in the possibility of a comprehensive annotation of food products.

The ontology will be published with an open source license on <http://github.com/ailabitmo/food-ontology>. We are welcome and fully support any contribution and the use of this ontology.

#### REFERENCES

- [1] Hitzler, Pascal, et al. "*OWL 2 Web Ontology Language: Primer. W3C Recommendation 27 October 2009*", 2009.
- [2] Dave Beckett, et al. "*RDF/XML Syntax Specification (Revised). W3C Recommendation 10 February 2004*", 2004.
- [3] Hepp, Martin. "Goodrelations: An ontology for describing products and services offers on the web," *Knowledge Engineering: Practice and Patterns (2008)*: 329-346.