Why Semantic (Web) Technologies?

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Kansas State University

http://www.daselab.org

Five diverse technology companies show how it's done.

BY NATASHA NOY, YUQING GAO, ANSHU JAIN, ANANT NARAYANAN, ALAN PATTERSON, AND JAMIE TAYLOR

Industry-Scale Knowledge Graphs: Lessons and Challenges

2019

or *ontology*. For example, a link from a movie to its director must connect an object of type Movie to an object of type Person. In some cases the links themselves might have their own properties: a link connecting an actor and a movie might have the name of the specific role the actor played. Similarly, a link connecting a politician with a specific role in government might have the time period during which the politician held that role.

Knowledge graphs and similar structures usually provide a shared substrate of knowledge within an organization, allowing different products and applications to use similar vocabulary and to reuse definitions and descriptions that others create. Furthermore, they usually provide a compact formal representation that developers can use to infer new facts and build up the knowledge—for example, using the graph connecting movies and actors to find out which actors frequently appear in movies together.

This article looks at the knowledge

CACM August 2019. Authors from: Google, Microsoft, Facebook, IBM, eBay

Laura Kelly

Governor of Kansas

Laura Kelly is an American politician serving as the 48th governor of Kansas since 2019. A member of the Democratic Party, she represented the 18th district in the Kansas Senate from 2005 to 2019. Kelly ran for governor in the 2018 election and defeated the Republican nominee, Kansas Secretary of State Kris Kobach. Wikipedia

Born: January 24, 1950 (age 69 years), New York, NY

Spouse: Ted Daughety

Party: Democratic Party

Office: Governor of Kansas since 2019

Education: Indiana University, Bradley University, Indiana University Bloomington

Children: Kathleen Daughety, Molly Daughety

hasEducation →

Indiana University

iu.edu

Indiana University is a multi-campus public university system in the state of Indiana, United States. Indiana University has a combined student body of more than 110,000 students, which includes approximately 46,000 students enrolled at the Indiana University Bloomington campus. Wikipedia

Mascot: Referred to as "The Hoosiers"

Endowment: 1.986 billion USD

Students: 110,436 university-wide

President: Michael McRobbie

Academic staff: 8,733 university-wide

Subsidiaries: Indiana University Bloomington, MORE

hasPresident →

Michael McRobbie

President of Indiana University

president.iu.edu

Michael Alexander McRobbie AO is an Australian-American computer scientist, educator and academic administrator. He became the eighteenth president of Indiana University on July 1, 2007. Wikipedia

Born: October 11, 1950 (age 69 years), Melbourne, Australia

Spouse: Laurie Burns (m. 2005)

Education: The Australian National University, The University of Queensland

Books: Automated Theorem-proving in Non-classical Logics, Automated Deduction - Cade-13

WIKIDATA

collaborative

open

multilingual

Welcome to Wikidata

the free knowledge base with 29,012,184 data items that anyone can edit

Introduction • Project Chat • Community Portal • Help
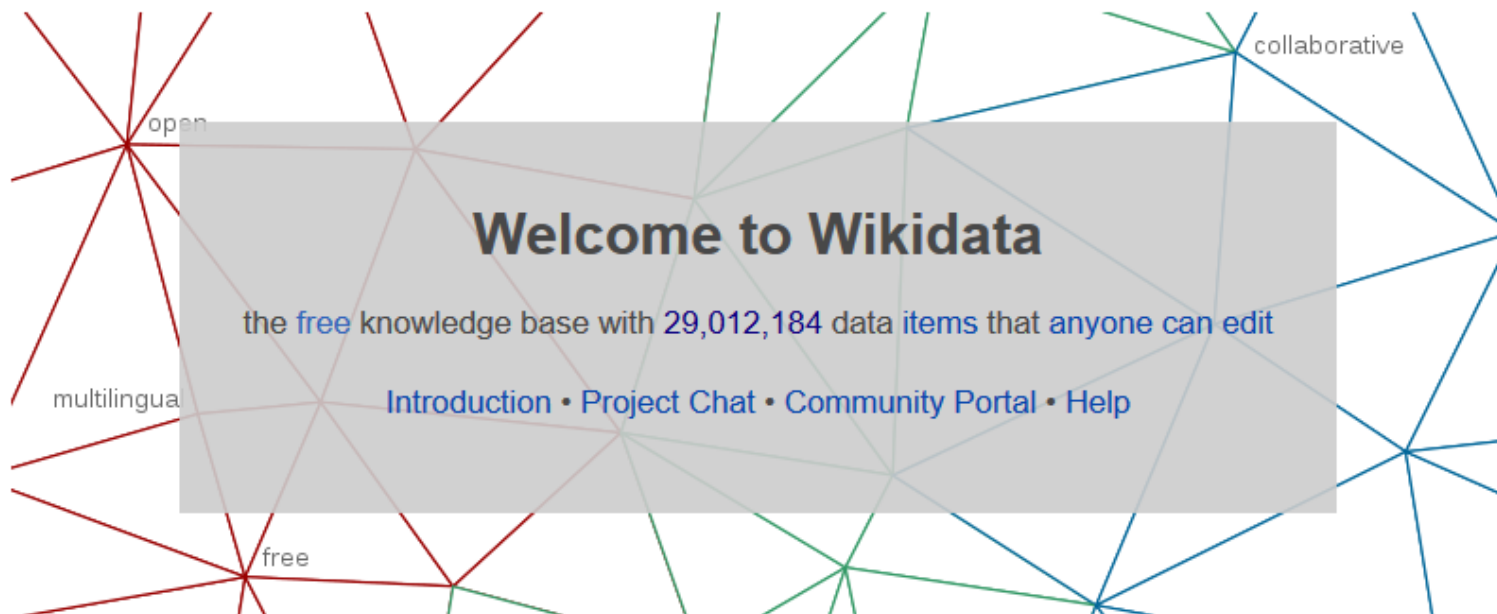
free

Welcome!

Wikidata is a free and open knowledge base that can be read and edited by both humans and machines.

Wikidata acts as central storage for the **structured data** of its Wikimedia sister projects including Wikipedia, Wikivoyage, Wikisource, and others.

Wikidata also provides support to many other sites and services beyond just Wikimedia projects! The content of Wikidata is available under a free license, exported using standard formats, and can be interlinked to other open data sets on the linked data web.

Learn about data

New to the wonderful world of data? Develop and improve your data literacy through content designed to get you up to speed and feeling comfortable with the fundamentals in no time.
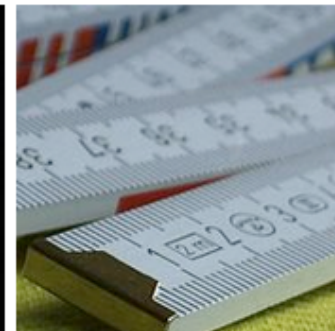
Schema.org **2011**

- **Collaboratively launched in 2011 by Google, Microsoft, Yahoo, Yandex.**
  2011: 297 classes, 187 relations
  2015: 638 classes, 965 relations

- **Simple schema, request to web site providers to annotate their content with schema.org markup. Promise: They will make better searches based on this.**

- **2015: 31.3% of Web pages have schema.org markup, on average 26 assertions per page.**

Ramanathan V. Guha, Dan Brickley, Steve Macbeth: Schema.org: Evolution of Structured Data on the Web. ACM Queue 13(9): 10 (2015)

- TrainTrip
- Organization
  - Airline
  - Corporation
  - EducationalOrganization
    - CollegeOrUniversity
    - ElementarySchool
    - HighSchool
    - MiddleSchool
    - Preschool
    - School
  - GovernmentOrganization
  - LocalBusiness
    - AnimalShelter
    - AutomotiveBusiness
      - AutoBodyShop
      - AutoDealer
      - AutoPartsStore
      - AutoRental
      - AutoRepair
      - AutoWash
      - GasStation
      - MotorcycleDealer
      - MotorcycleRepair
    - ChildCare
    - Dentist
    - DryCleaningOrLaundry
    - EmergencyService
      - FireStation
      - Hospital
      - PoliceStation
    - EmploymentAgency
    - EntertainmentBusiness
      - AdultEntertainment
      - AmusementPark
      - ArtGallery
      - Casino
      - ComedyClub
      - MovieTheater
      - NightClub
    - FinancialService
      - AccountingService
      - AutomatedTeller
      - BankOrCreditUnion
      - InsuranceAgency
    - FoodEstablishment
      - Bakery
      - BarOrPub
      - Brewery
      - CafeOrCoffeeShop
      - FastFoodRestaurant

Knowledge Graph Standards

RDF 1.1 Concepts and Abstract Syntax

W3C Recommendation 25 February 2014

This version:
http://www.w3.org/TR/2014/REC-rdf11-concepts-20140225/
Latest published version:
http://www.w3.org/TR/rdf11-concepts/
Previous version:
http://www.w3.org/TR/2014/PR-rdf11-concepts-20140109/
Previous Recommendation:
http://www.w3.org/TR/rdf-concepts
Editors:
Richard Cyganiak, DERI, NUI Galway
David Wood, 3 Round Stones
Markus Lanthaler, Graz University of Technology

1.0 Versions: 2004

OWL 2 Web Ontology Language Primer (Second Edition)

W3C Recommendation 11 December 2012

This version:
http://www.w3.org/TR/2012/REC-owl2-primer-20121211/
Latest version (series 2):
http://www.w3.org/TR/owl2-primer/
Latest Recommendation:
http://www.w3.org/TR/owl-primer
Previous version:
http://www.w3.org/TR/2012/PER-owl2-primer-20121018/
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Sebastian Rudolph, FZI Research Center for Information

W3C Recommendation

Thanks!