Food and Agriculture Organization of the United Nations

>> FAO Statistics Division

Caliper

Statistical Classifications in a Linked Open World

Caterina Caracciolo, Carola Fabi

Interactive and digitally-enabled statistical standards and classifications

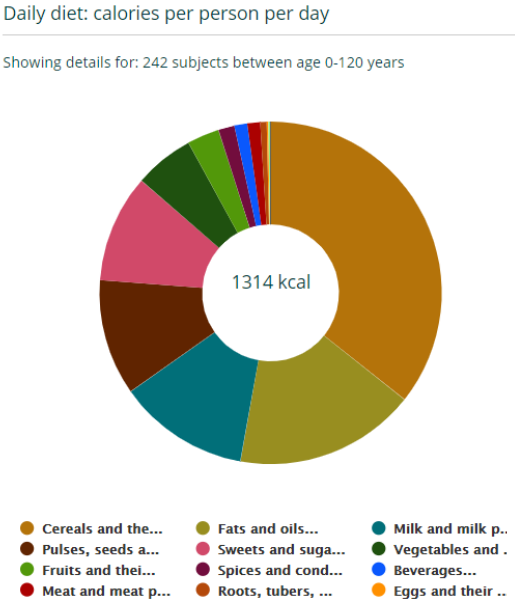
52 session of UN Statistical Commission — Online, 23 Feb 2021

FAO & data

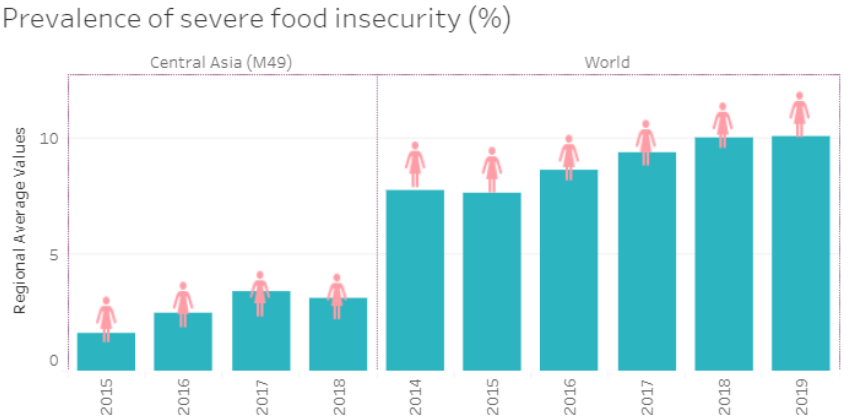
FAO custodians of 21 indicators under 6 SDGs

International mandate for data collection dissemination and innovation

FAOSTAT



FAO Data Lab



What triggered the idea of Caliper?

Caliper

Statistical Classifications in a Linked Open World

Today

Part I. Overview of Caliper

- The Why
- Three main features

Part II. A bit more on..

- The modelling paradigm
- Tools
- Applications

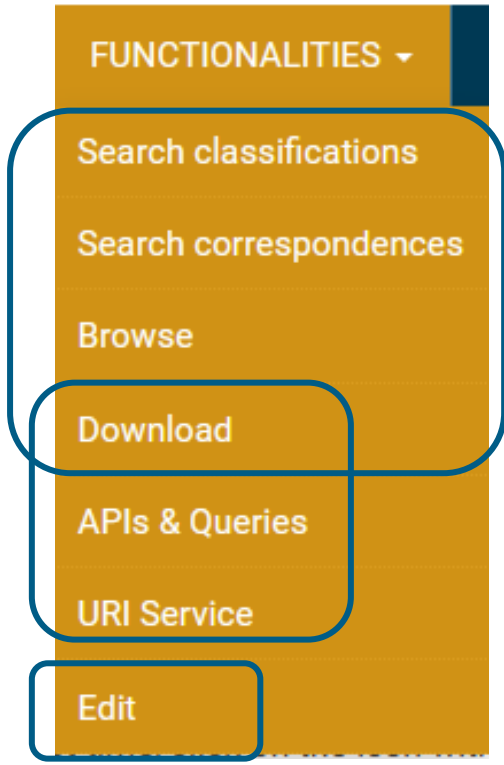
Ongoing and future work

Part I
Overview

Caliper

Caliper is a web platform serving statistical classifications as machine-readable data

- based on open standards
- supporting all steps in data lifecycle
    - Creation/maintenance, Publication, Use



Current: https://stats-class.fao.uniroma2.it/caliper/
http://bit.ly/Caliper_UTor

Moving to: http://datalab.review.fao.org/datalab/caliper
http://bit.ly/Caliper_FAO_temp

Why Caliper

BMGF grant to produce new/better agricultural data

FAO to support IATI in producing more *interoperable* data out of the reports made by donors

Caliper originated from one observation made while working on this..

Observation

Some inconsistencies in reported data were due to the use of codes “alone” (the classification system of origin was implicit)

Turkey

In isolation, codes are ambiguous, just like words

0111

CPC2.0, 2.1
“Wheat”

ISICRev4:
"Growing of cereals (except rice), leguminous crops and oil seeds"

The goal

Global standards should be treated as global resources

- Refer to them without ambiguity
- Share, reuse without loss/corruption of meaning

Serve statistical classifications as public goods

Caliper – contents to date

Vocabulary Categories

ACTIVITIES	ISICRev4
AID FLOWS	CRS 2016 05 CRS 2018 01 CRS 2020 01
CROPS	ICC v1.0 ICC v1.1 WCACrops
FORESTRY	Forest Products Class. 2016
GEOGRAPHY	M49 FAO current M49 FAO Dec 2019 M49 FAO Jul 2019 M49 UNSD SDG grouping
NUTRITION	FoodEx2 2016
PRODUCTS	CPC v2.0 CPC v2.1 FCL HS
SOIL	WRB 1998 WRB 2014 (update 2015)
TERMINOLOGIES	Names of Countries and Territories (NOCS)

	ISIC4	ICC10	ICC11	WCACROPS	FPCD	CPC20	CPC21	CPC21AG	CPC21Fert	FCL	HS
ISIC4		NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
ICC10	NO		YES	YES	NO	NO	YES	YES	NO	NO	NO
ICC11	NO	YES		YES	NO	NO	YES	YES	NO	NO	NO
WCACROPS	NO	YES	YES		NO	NO	YES	YES	NO	NO	NO
FPCD	YES	NO	NO	NO		NO	YES	NO	NO	NO	YES
CPC20	NO	NO	NO	NO	NO		YES	NO	NO	YES	NO
CPC21	YES	YES	YES	YES	NO	YES		NO	NO	YES	YES
CPC21AG	NO	YES	YES	YES	NO	NO	NO		NO	YES	NO
CPC21Fert	NO	NO	NO	NO	NO	NO	NO	NO		YES	YES
FCL	YES	YES	YES	YES	NO	YES	YES	YES	YES		YES
HS	NO	NO	YES	NO	NO	NO	YES	YES	YES	YES	

	AGROVOC	DBPEDIA	EU-CPA
ICC10	YES	NO	NO
ICC11	YES	NO	NO
M49FAO	YES	YES	NO
M49FAO-2019-07	YES	YES	NO
M49FAO-2019-12	YES	YES	NO
M49UNSD	YES	YES	NO
CPC21	NO	NO	YES

Three fundamental features of Caliper

#1 - Global identifiers over the web **- for referencing**

#2 - Standard modelling paradigm - **for interoperability**

#3 - Open-source tools - **for transparency**

#1 - Global identifiers

0111

0111

Q: Which 0111 is which?

A: Use globally unique identifiers (and “actionable”)

Uniform Resource Identifier (URI)
a unique sequence of characters that identifies a resource used by web technologies

http://namespaceCPC/0111

http://namespaceISIC/1079

#2 - Standard modelling paradigm

2		**Vegetables and melons**
	2.01	Leafy or stem vegetables
	2.01.01	*Artichokes*
	2.01.02	*Asparagus*
	2.01.03	*Cabbages*
	2.01.04	*Cauliflower and broccoli*
	2.01.05	*Lettuce*
	2.01.06	*Spinach*

Q: How to best render this for a computer?

And translations, correspondences, metadata, …

A: Use modelling paradigm that are standard - publicly described globally endorsed

Word Wide Web Consortium

DATA DOCUMENTATION INITIATIVE

#3 - Open-source tools

Q: What about software, what tools to use?

A: Tools oriented to interoperability and transparency

- Supporting standard modelling paradigm, open formats
- Open-source, compatible licenses

Part II
A bit more on…

#1 – The standard modelling paradigm

Word Wide Web Consortium

DATA DOCUMENTATION INITIATIVE

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	2.01.05	*Lettuce*
	2.01.06	*Spinach*

Group	Class	Sub class	Order	Descriptor
2				**Vegetables and melons**
	2.01			Leafy or stem vegetables
		2.01.01		Artichokes

Code	Description
0	Agriculture, forestry and fishery products
01	Products of agriculture, horticulture and marke
011	Cereals
0111	Wheat
01111	Wheat, seed
01112	Wheat, other
0112	Maize (corn)
01121	Maize (corn), seed
01122	Maize (corn), other

SKOS Simple Knowledge Organization System Reference

DDI XKOS released for public use

The DDI Alliance (http://www.ddialliance.org/) is pleased to announce the public release of XKOS version 1.2, a free of statistical classifications.

#1 – The standard modelling paradigm

Classification	*skos:ConceptScheme* (identified by a URI = unique I
Item	*skos:Concept* (identified by a URI = unique http://
Code	*skos:notation* (its subject is a *skos:Concept*
Item names	*skos:prefLabel* (its subject is a *skos:Concept*; with la
Explanatory note	*skos:scopeNote* (its subject is a *skos:Concept;* with la
Definition	*skos:Definition* (its subject is a *skos:Concept;* with la

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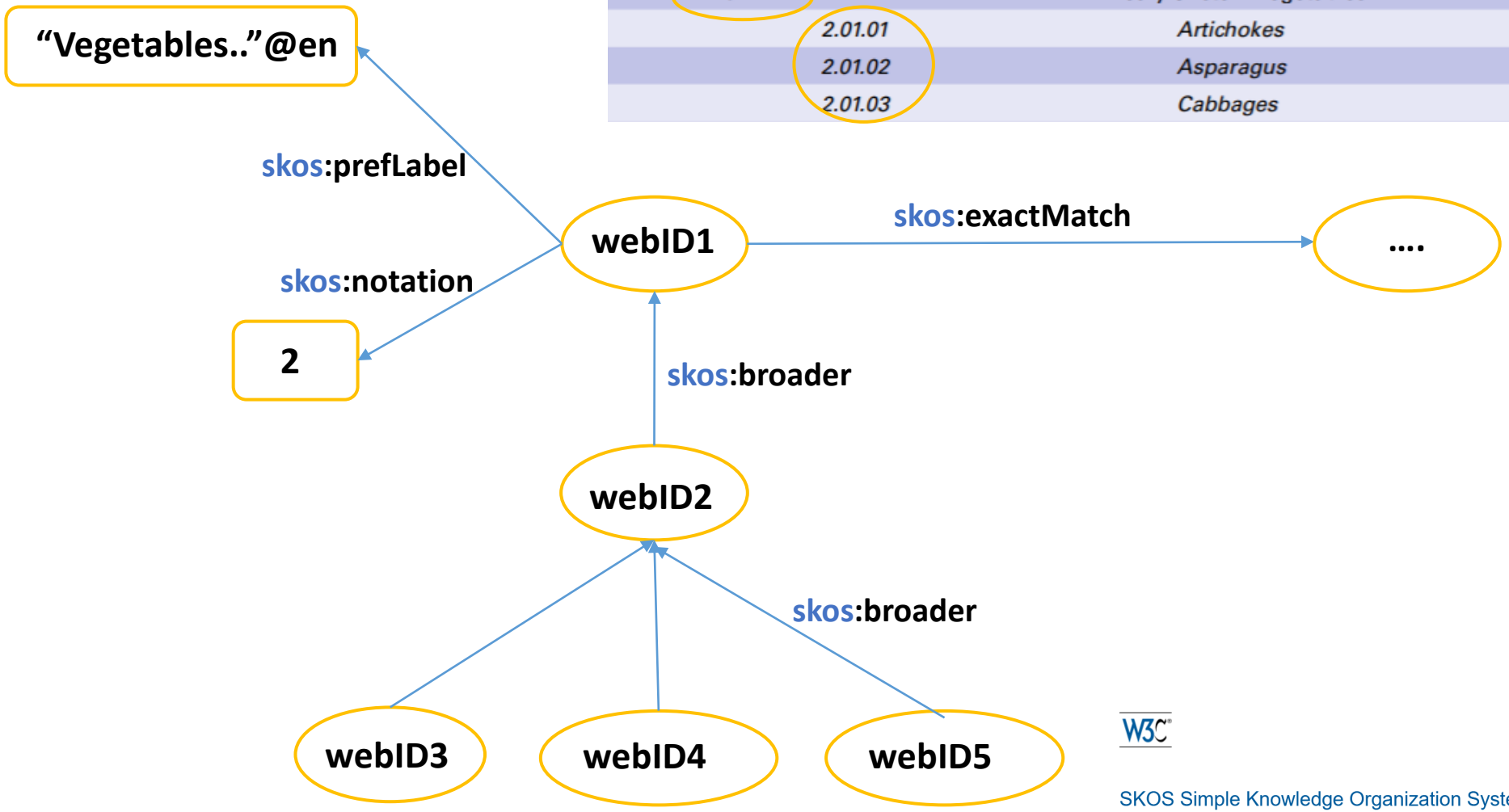


SKOS Simple Knowledge Organization System Reference

#1 – The importance of sharing models

- Better reuse of data, interoperability
- Uniform application interfaces
- Consistency across resources

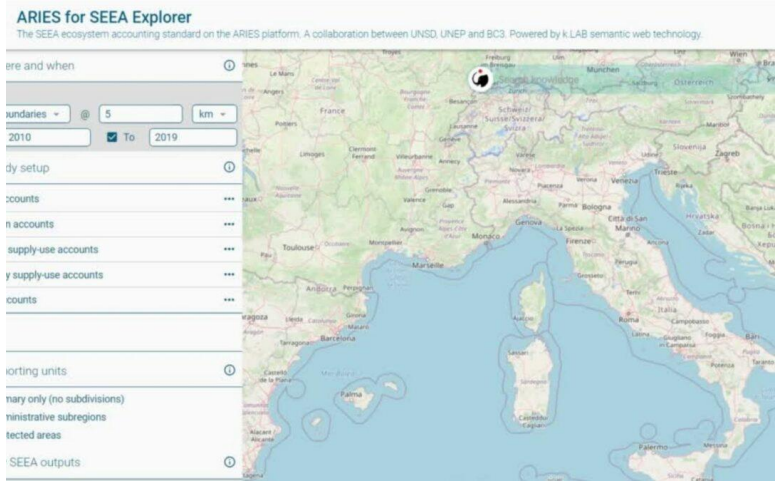
#2 – Tools used in Caliper

- Open source & free of charge
- Natively oriented to web technologies
- With solid development commitment
- Large base of (institutional) users
- Tested in other initiatives @FAO (e.g., AGROVOC)

#3 – Applications of Caliper

Different applications for different users!

1. A “classification server”
   - For inclusion in surveys, information system,…
2. Look-up service for general use
3. A service for Custodians & maintainers
4. Computer applications, as in the Aries for SEEA Explorer (launch in April 2021)



Ongoing / future work

- Caliper in production
  - FAO “Names of Countries and Territories” maintained in Caliper
  - Website under FAO domain
- Include output for SDMX
- Collaboration and peer review

Pointers

Caliper website

- Soon to be discontinued: https://stats-class.fao.uniroma2.it/caliper/

  http://bit.ly/Caliper_UTor
- FAO interim: http://datalab.review.fao.org/datalab/caliper
- http://bit.ly/Caliper_FAO_temp
- VocBench: http://vocbench.uniroma2.it/
- Skosmos: https://skosmos.org/