

Validation Scenario for Anthropogenic Impact and Global Climate Change for Tadoo

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The role of Masaryk university in TaToo

- TaToo tools will be validated in three different validation scenarios.
- Masaryk University (MU) is validating the TaToo tools in the *Validation scenario of anthropogenic impact and global climate change* (MU Scenario).
- It aims to improve the discovery of web resources in the domains of environmental pollution by POPs including influence of global climate change and epidemiology, and tries to discover relationships between these domains.

Anthropogenic impact (POPs x human health)

POPs

Used sources

Compounds

Primary resources

Secondary resources

Information services

Models

Select desired compound

Discovery compliant resource

Checking the validity of resource

Finding eccentricity in the resource

Cancer

Used sources

Diagnose

Primary resources

Secondary resources

Information services

Models

Select desired cancer

Discovery compliant resource

Checking the validity of resource

Finding eccentricity in the resource

Find dependency ???

Compare resources and their eccentricities

Global climate change (POPs x POPs trajectory)

POPs

Used sources

Compounds

Primary resources

Secondary resources

Information services

Models

Select desired compound

Discovery compliant resource

Checking the validity of resource

Finding eccentricity in the resource

Trajectory

Used sources

Weather, atmosphere

Primary resources

Secondary resources

Information services

Models

Select desired resources of trajectory

Discovery compliant resource

Checking the validity of resource

Finding eccentricity in the resource

Find dependency ???

Compare resources and their eccentricities

In terms of **time range, place, impacts, ...**

Listing of POPs in the Stockholm Convention

The chemicals targeted by the Stockholm Convention are listed in the annexes of the convention text:

Annex A (Elimination)

Parties must take measures to **eliminate** the production and use of the chemicals listed under Annex A. Specific exemptions for use or production are listed in the Annex and apply only to Parties that register for them.

- | | | |
|---|--|-----------------------------------|
| ● Aldrin | ● Chlordane | ● Chlordecone |
| ● Dieldrin | ● Endrin | ● Heptachlor |
| ▲ Hexabromobiphenyl | ▲ Hexabromodiphenyl ether and heptabromodiphenyl ether | ●▲ Hexachlorobenzene (HCB) |
| ●■ Alpha hexachlorocyclohexane | ●■ Beta hexachlorocyclohexane | ● Lindane |
| ● Mirex | ●▲■ Pentachlorobenzene | ▲ Polychlorinated biphenyls (PCB) |
| ▲ Tetrabromodiphenyl ether and pentabromodiphenyl ether | ● Toxaphene | |

Annex B (Restriction)

Parties must take measures to **restrict** the production and use of the chemicals listed under Annex B in light of any applicable acceptable purposes and/or specific exemptions listed in the Annex.

- | | |
|-------|--|
| ● DDT | ▲ Perfluorooctane sulfonic acid, its salts and perfluorooctane sulfonyl fluoride |
|-------|--|

Annex C (Unintentional production)

Parties must take measures to reduce the **unintentional releases** of chemicals listed under Annex C with the goal of continuing minimization and, where feasible, ultimate elimination.

- | | | |
|--|--|---------------------------|
| ■ Polychlorinated dibenzo-p-dioxins (PCDD) | ■ Polychlorinated dibenzofurans (PCDF) | ■ Hexachlorobenzene (HCB) |
| ■ Pentachlorobenzene | ■ Polychlorinated biphenyls (PCB) | |

● Pesticides

▲ Industrial chemicals

■ By-products

Specific effects of POPs

- Can include cancer, allergies and hypersensitivity, damage to the central and peripheral nervous systems, reproductive disorders, and disruption of the immune system.
- Some POPs are also considered to be endocrine disruptors, which, by altering the hormonal system, can damage the reproductive and immune systems of exposed individuals as well as their offspring.



Global Environmental Assessment
Information System

[POPs](#)

[Stockholm Convention](#) ▾

[Data sources](#)

[Analytical tools](#)

[Research topics](#) ▾

[Partners](#)

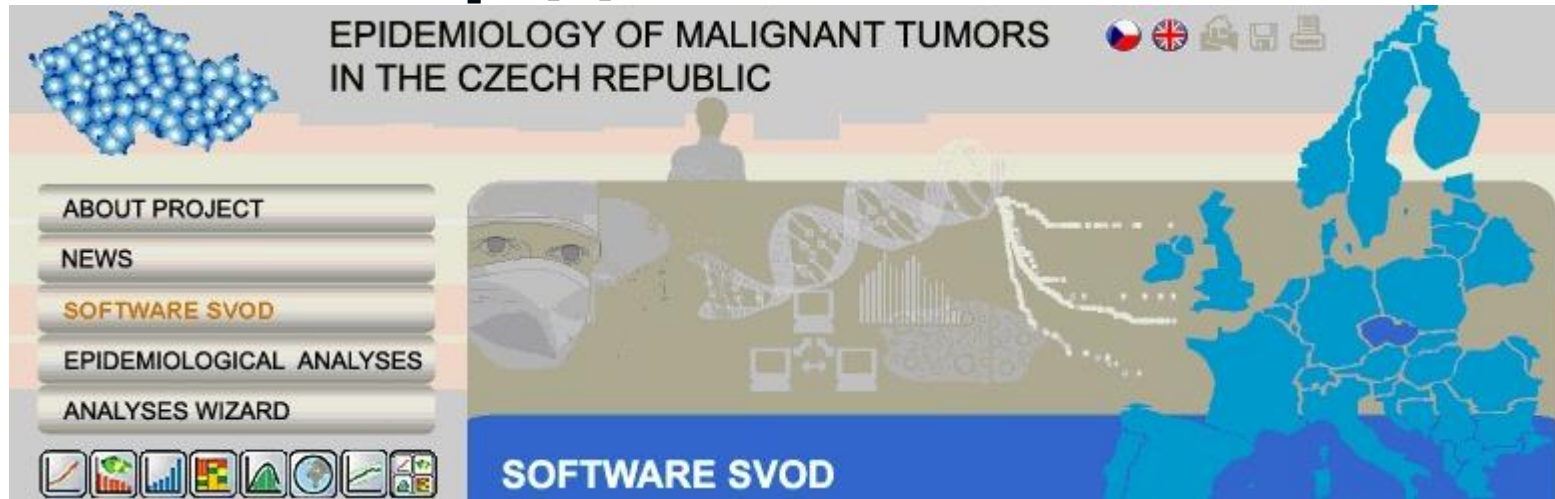
GENASIS

(Global ENvironmental ASsessment Information System)

- ↻ **Information about the aims of GENASIS system and about Stockholm convention**
- ↻ **Encyclopaedic description of the substances included in the Stockholm convention**
- ↻ **Analytical module**
- ↻ **Related case studies and scientific topics**

The SVOD web site

<http://www.svod.cz>



SVOD (Software for Visualizing of Oncological Data)

- ↷ **Information about the aims of SVOD project**
- ↷ **Epidemiology of Malignant Tumor Analysis**
- ↷ **Analyses Wizard**
- ↷ **News**

Scenario

Discover, validate and qualify of POPs data/service/model resources

Description

- Provide the possibility for users to choose (find) desired compound from the list of compounds (Stockholm convention).
- Decide if the data source matching a minimal data source standard.
- Decide if data source locality matching desired locality region. Recognize the validity of the data source.
- Find out a interesting features of the data (e.g. eccentricity of time trend).

Scenario

Discover, validate and quality of epidemiology data
(cancer registry)/service/model resources

Description

- Provide the possibility for users to choose (find) desired diagnose from the list of diagnosis (standardized list).
- Decide if the data source matching a minimal data source standard.
- Decide if data source locality matching desired locality region.
- Recognize the validity of the data source.
- Find out a interesting features of the data (e.g. eccentricity of time trend).

Scenario

Discover, validate and qualify of climate change on POPs
trajectory data/service/model resources

Description

- Provide the possibility for users to choose (find) desired changes from the list of global climate changes.
- Decide if the resource matching a minimal information standard.
- Decide if resource locality matching desired locality region. Recognize the validity of the resource.
- Find out a interesting features of the resource (e.g. eccentricity of long time trend).

Scenario

Discover some kind of dependency between cancer epidemiology and POPs concentration, (climate change and POPs trajectory)

Use cases

- User is interested into one compound, region and time duration and want to know if there is a dependency between this compound and any kind of cancer in desired region
- User know the compound and type of cancer and want to find any region, where in the history exists the dependency between desired compound and cancer
- User want to find a cancer, time and region where is a some excentricity in incidence of young patients (< 40) and find any compound that have any eccentricity in the same region and

- 1. Scientific users:** regular users with scientific background and assumed IT skills. They will use the system to discover resources from domains (POPs, health issues). They will be able to find resources, find similar ones (having already found some resource), compare the resources, and also to find connections between resources. Everything on the “read only” basis.
- 2. Domain experts:** group of domain experts collects users who have some additional functionality to scientific users. Domain experts can also evaluate resources and assign metadata to the resources. By the means of mentioned functions they will contribute to the information enrichment process.
- 3. System administrators:** system administrators will be responsible for organisational and maintenance tasks in order to guarantee proper system functionality. This involves also user administration, system settings, problem solving, user support etc

UC1: Discover resources with existing tools.

SVOD and GENASIS users will be provided with the possibility to indirectly use the TaToo functionality for discovering similar resources based on analysed objects in mentioned web portals.

UC2: Generic discovery.

Deliver improvements regarding result relevance compared to conventional search engine results. The relevance of the resources to the search criteria should be improved so that the user receives more potentially interesting search results. This circumstance hopefully leads to a reduction in the tedious effort of scanning search results for matching entries.

UC3: Persistent Organic Pollutant Resource Discovery.

UC4: Oncological resource discovery.

UC3 and UC4 bring extended domain specific search. Domain experts are allowed to enrich the resources by using TaToo tools.

UC5: Define resource uncertainty.

Domain experts are allowed to define certain quality criteria for resources.

UC6: Compare resources.

UC5 enables users to compare discovered resources immediately after the discovery. This use case should be helpful in finding the relationships between different resources either in the same domain or in different domains.

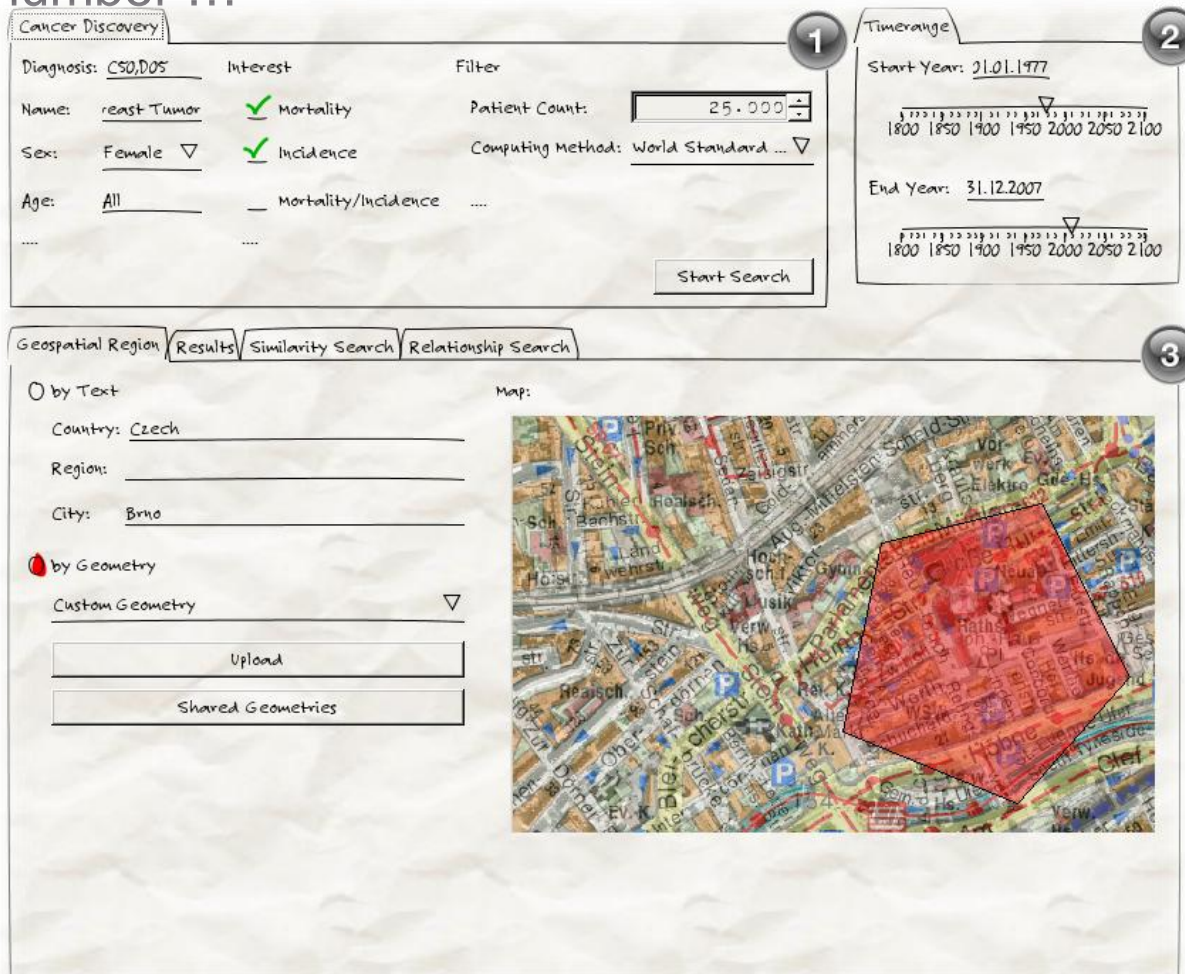
UC7: Find similar resources.

UC7 allows the functionality to search for similar resources based on interesting resources already found.

UC8: Find related resources.

The last use case provides the possibility to search for related resources in other knowledge domains based on an already found resource.

Discovery of cancer related resources based on a domain specific search mask with a common parameter such as diagnosis, gender, patient number ...



1 **Cancer Discovery**

Diagnosis: C50,D05 Interest Filter

Name: reast Tumor Mortality Patient Count:

Sex: Female Incidence Computing Method: World Standard ...

Age: All Mortality/Incidence

Start Search

2 **Time range**

Start Year: 21.01.1977

1800 1850 1900 1950 2000 2050 2100

End Year: 31.12.2007

1800 1850 1900 1950 2000 2050 2100

3 **Geospatial Region** Results Similarity Search Relationship Search

by Text

Country: Czech

Region: _____

City: Brno


by Geometry

Custom Geometry

Upload

Shared Geometries

Map:



1. Specify Search Parameter.

This panel illustrates what a specialised search mask for oncological discovery could look like. The user has the possibility to specify the parameter for the search and set additional filters such as calculation methods, patient count.

2. Specify Time Range.

The user has the option to define the start and end time of the period of interest. The result list should only contain information which has content within the temporal boundaries.

3. Specify Geospatial Region.

The user will have the possibility to specify a geospatial region indicating the spatial dimension of the desired resource. Similar to the time range only resources will be found which address the specified area.

Discovered resources matching the search criteria entered by the user.

For every resource, key values are displayed such as **level of uncertainty, relevance, and additional actions.**

The user should be able to sort through these criteria, for example to find resources with a low uncertainty.

Cancer Discovery

Diagnosis: C50.D05 Interest Filter

Name: breast Tumor Mortality Patient Count:

Sex: Female Incidence Computing Method: World Standard ... ▾

Age: All Mortality/Incidence

.....

Start Search

Time range

Start Year: 21.01.1977

1800 1850 1900 1950 2000 2050 2100

End Year: 31.12.2007

1800 1850 1900 1950 2000 2050 2100

Geospatial **1** Results Similarity Search Relationship Search

Name	Type	...	Uncertainty	Relevance	Control
Czech Cancer Report	Word Document		● ● ●	99%	~
SVD Analysis	Interactive		● ● ●	98%	~
EU Cancer Statistics	PDF		● ● ●	78%	~
EU Cancer Database	Webservice		● ● ●	12%	~

Results: 25

1

Resource Name: **Local Center Effect**

Resource Type: **PDF Document**

Resource Address: **http://www.lea.uni-leipzig.de/lehre/lehre/UC4/LEA.pdf**

Actions:

[View Resource](#) | [Related Resources](#) | [Feedback](#)

[Add to My Favorites](#)

2

3

Requirements Level: **2.0**

Take points level: **450** minutes

Take points credits: **150** minutes

Number of points: **1500**

Use of paper: **100** km²

Use of water: **10** m³

4

5

Volume: **2**

Introduction: **100** km²

Name: **100** km²

Description:

100 km² is a typical example of a typical... For the study a detailed analysis of the area description was used, which is not displayed in the institutional context... which can provide lead to a description of the data source.

6

Number of activities: **1000**

Use of resources: **1000**

Age of resources: **10**

Operating method: **Local Center Effect (LEA)**

Usage: **10**

Use: **10**

Use of resources: **1000**

Diagram:

LEA - Integrated analysis of local...
LEA - Combined in use of local...

Information:

Introduction
Description
Usage

7

8

Introduction: **1000** km²

Usage:

- Introduction Credits
- Introduction Credits
- LEA Usage

100 km² is a typical example of a typical... which can provide lead to a description of the data source.

9

10

Introduction: **1000** km²

Usage:

- Introduction Credits
- Introduction Credits
- LEA Usage

100 km² is a typical example of a typical... which can provide lead to a description of the data source.

- 1. General Resource Information.** Information about the resource such as type and address of resource.
- 2. Domain Specific Information.** Domain specific annotations of the resource are listed here. In this case, attributes such as number of participating patients, patient gender, and computing method are available and presented to the user.
- 3. Related Resources** References to other resources. The related resources can be directly accessed and the description of the particular resource is presented to the user.
- 4. Uncertainty Level.** Visualization of the uncertainty of the resource.
- 5. Validation Information.** Meta information about the validation process, such as used tools, standards, and conclusion.
- 6. Resource Visualisation.** A component to visualise contents of particular types of resources.

Thanks

Questions?

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Project Partners



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