Building Process of a Domain Ontology:
An Empirical Validation

Dear colleague,

We would like to thank you for participating in this validation activity related to the SUPERSEDE project, www.supersede.eu. Please, read carefully the instructions below and be sure of following them as you proceed. Otherwise, the validation activity will not be valid.

Please, take into account that you are kindly requested to measure accurately the time it takes you to complete the activity using these 2 metrics:

- T1: The time it takes to read and understand sections *1. Exercise* and *2. Supporting material* before starting to develop the solution.
- T2: The time it takes to elaborate and write down the solution. If, during the elaboration of the solution, you need to revise again the supporting material or the statement of the exercise, include this revision time into T2, not T1.

Note: in the next page starts the exercise, please make sure you have printed page 5 for drawing your solution; be aware of the previous instructions; and prepare a chronometer to measure first T1 and then T2. When you have finished the solution, stop measuring time and fill the form of results in this document (page 6). Afterwards, please scan or take a picture of the page of your solution and send it along with this document to ocabrera@essi.upc.edu.

If you have any doubt, do not hesitate to contact us before starting.

Yours faithfully,

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1. Exercise

The exercise consists on modeling a new type of monitoring tool extending an existing ontology for monitors. For this purpose, consider the following scenario.

In the SUPERSEDE project, a new type of monitoring tool is required to gather the reviews that users provide for an app in Google Play.

To do so, we need to model a *market place* monitoring tool in the ontology. It has the following information:

- Unique **identifier** of the tool;

- **Status** specifying if the monitor is up and running or not.

Furthermore, this monitoring tool has a profile that includes information such as:

- **Name** of the tool;

- Short **description** of the tool;

- **Endpoint** specifying the URL where the monitor is installed.

Such profile has, in turn, a configuration profile that includes all the information required to configure this type of monitor, in particular, it has:

- A **parameter** indicating **how often the monitoring tool should be executed** to retrieve new reviews (e.g. the monitor should be executed every 45 seconds to retrieve new reviews);

- **URL** where the monitored results should be send;

- Unique **identifier** of the app that is going to be monitored.

We also want to model the monitored data produced by this monitoring tool. Such monitored data, has the following information:

- Unique **identifier** that the monitor will generate each time is executed;

- **Date and time** of the execution of the monitor;

- **Number of new reviews** obtained in the execution of the monitor (This is done to materialize the counting of the list of reviews).

The monitored data will also include the set of reviews monitored. For each new review (which, in terms of monitoring is a type of *data item*), we want to have the following information:

- Unique **identifier** of the review;

- The **name** of the **reviewer** (i.e. user);

- **Number** from 0 to 5 indicating the **'stars'** given in the review for the app;

- Full **description** of the **review**.

At this point, you have the specification needed to model the required ontology. Next, you can read the supporting material. Still the time is counting for T1.

2. Supporting material:

In Fig.1 we conceptualize both the upper level (specifying generic classes) and the domain level (specifying domain specific concepts) of an ontology. For the domain-level, we provide as an example a new type of monitoring tool named *SocialNetworksMonitoring* that may help the reader to analogously create the new type of monitoring tool requested in the exercise. We describe in several tables in the next page, the input and output data needed by each specific-level class depicted in Fig.1. This information (hierarchy and glossary of terms) simulate the state that a modeller interested in using this ontology would find as starting point.
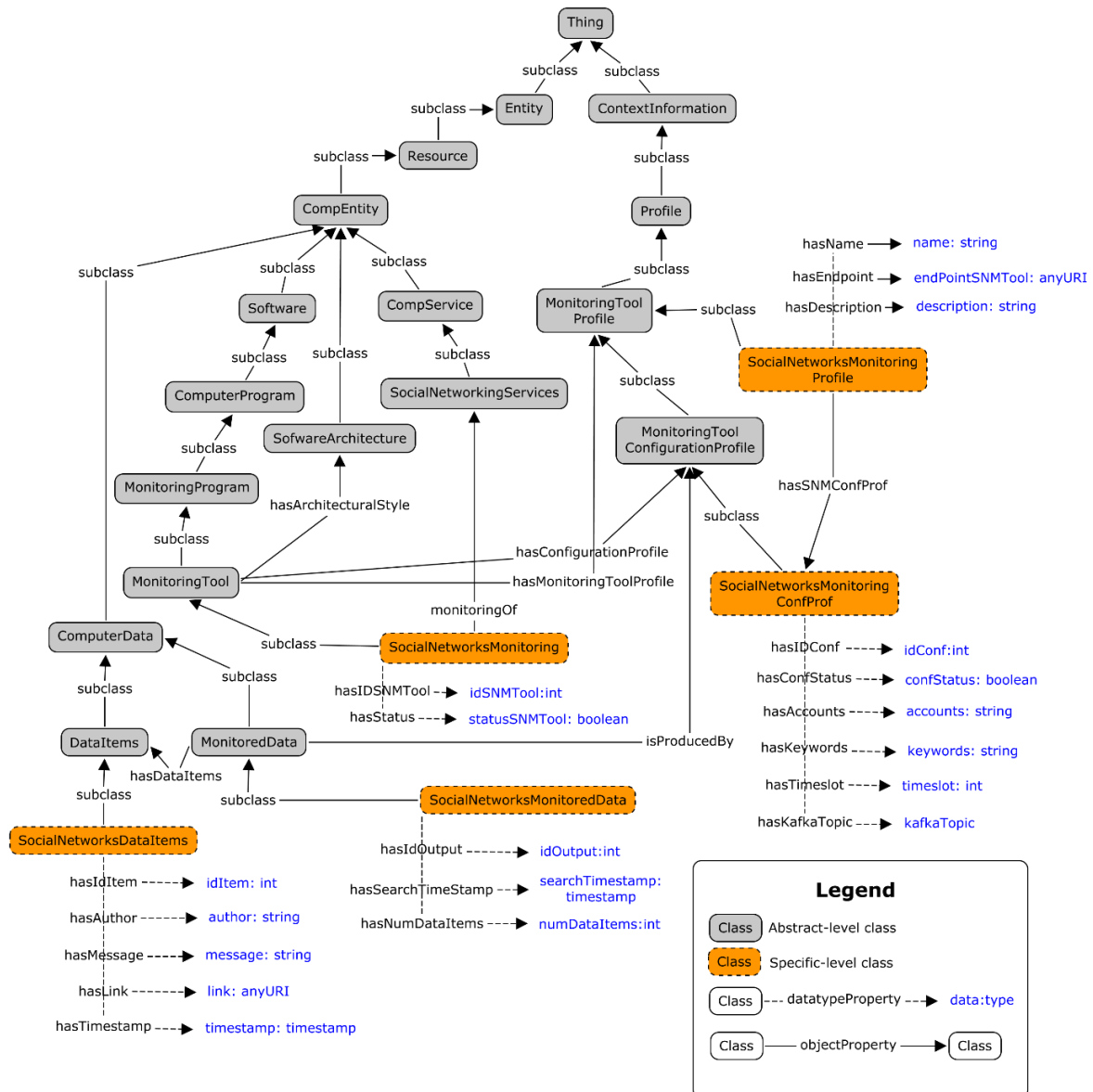

Fig 1. Modelling a type of monitoring tool (social networks)

Table 1. Glossary of data - SocialNetworksMonitoring

Parameter/data	description
idSNMTool	Identifier of the monitoring tool
statusSNMTool	Status specifying if the monitor is up and running or not

Table 2. Glossary of data - SocialNetworksMonitoringProfile

Parameter/data	description
name	Name of the monitoring tool
endpointSNMTool	URI where the monitoring tool is located and can be accessed
description	A short description of the monitoring tool

Table 3. Glossary of data - SocialNetworksMonitoringConfProf

Parameter/data	description
idConf	Identifier of a configuration
confStatus	Status specifying if the configuration is up and running or not
accounts	Accounts that are going to be monitored
Keywords	The keywords that we want to search for
timeslot	The timeslot between two monitoring invocations
kafkatopic	The topic that is used for storing the monitored data in Kafka (a messaging system to capture and publish data).

Table 4. Glossary of data - SocialNetworksMonitoredData

Parameter/data	description
idOutput	Identifier of each output of the monitoring tool
searchTimestamp	The timestamp in which the data has been collected
numDataItems	How much data items have been collected

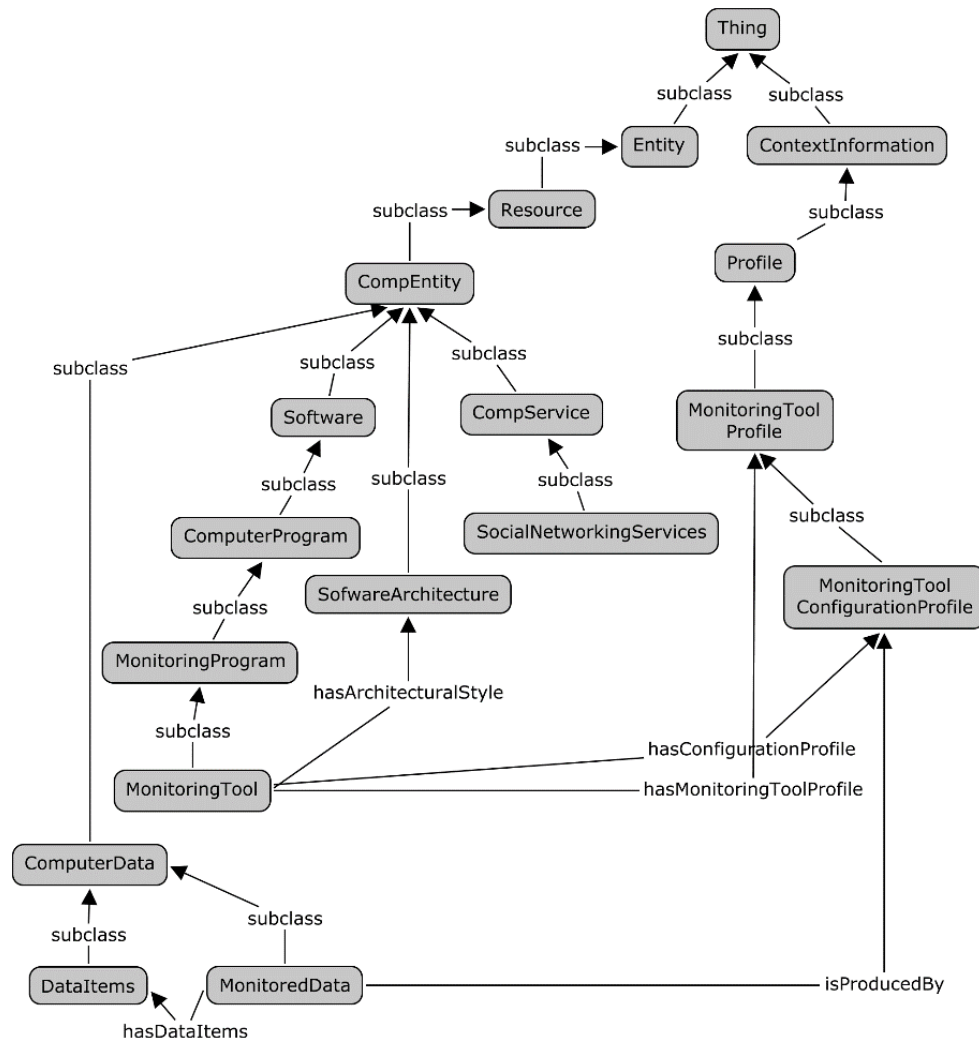**Table 5.** Glossary of data - SocialNetworksDataItems

Parameter/data	description
idItem	The identifier of the item
author	The author of the social network message
message	The text of a social network message
link	The link to the original message
timestamp	The timestamp in which that message was created

Now you can stop your chronometer and take note of the final value for T1.

3. Solution to complete:

Exercise: extend the ontology below, which is the same one as in Fig. 1 without the example, to model the new type of monitoring tool with its specification according to the description given in Section 1.

4. Results

Please, write the answers to the following questions in this document (don't do it by hand):

1. Describe your level of expertise in ontologies and rate it numerically from 1 (low) to 5 (high):

2. Describe your level of expertise in monitoring and rate it numerically from 1 (low) to 5 (high):

3. Include the time T1 (reading and understanding the document):

4. Do you consider the document well explained and the supporting material useful for elaborating the solution (e.g., glossary of data)? Did you find any issue or difficulty while reading the document?

5. Include the time T2 (elaborating and writing the solution):

6. Do you consider that the specified abstract ontology is useful, easily extensible and provides the concepts and relations needed to conceptualize any monitoring tool? Did you find any issue or difficulty while elaborating the solution? (Yes/No. If no, please provide rationale)

Thank you very much for your support, please send the answers to ocabrera@essi.upc.edu.