---Review #1---

The authors describe a mechanism for importing terms from an external

ontology into another ontology and provide a tutorial on the

implementation of the method used by OBI. I think that this article

will be interesting and useful to ontology developers especially from

the OBO community who are interesting in linking to other OBO

ontologies.

I do not have any major criticisms, but I would suggest that since

this article is written partly as a tutorial it would be useful to

have more general explanations and descriptions. The topic is very

interesting to me because I would like to implement something similar

for our ontology, but I find that I am left with a number of

questions. How would the mechanism for for OBO format ontologies?

Could a concrete example be given of the problems that are to be

avoided by using MIREOT (I think I understand this myself but this is

not really made clear in the manuscript)? What exactly is the

advantage of MIREOT over just using a Perl script to compare

IDs/names/definitions of the imported terms with the those in the

external ontology? I for one am a bit wary of using an automatic

MIREOT scheme that will automatically update definitions (what if the

external ontology does make some silly mistake) and think that some

amount of manual curation is necessary. It would be quite easy to

keep my external terms in a separate file and to run a script as a

cron job and get some message if there has been a change in an

external ontology. The MIREOT method seems to have the same

capabilities but seems to be rather more complicated. So what do I

get in return for the added complication? This is something that is

missing from the manuscript at present.

There are especially two areas that are somewhat opaque in the

current manuscript that would benefit from a more detailed

description:

1) The authors write, „ during the development of the Ontology of

Biomedical Investigations (OBI) (OBI Ontology), importing the root

class of the Common Anatomy Reference Ontology (CARO) (Haendel et

al., 2008) was not desired as its definition intersected multiple

classes in OBI..."

It would be interesting to have an example of what is meant, as it is

not clear to me. I was not aware that OBI has an anatomy hierarchy.

What terms are overlapping?

2) „We tried several modularization tools (Grau et al., 2007;

Jimenez-Ruiz et al., 2008; Seidenberg, Rector,

2006; Sirin et al., 2007). All of them discarded annotations,

resulting in modules containing only the

class declarations and no annotation properties, such as labels or

definitions."

It would be useful to describe how these modularization tools work.

At least it is not familiar to me that there are tools that can

automatical extract submodules of an ontology in any useful way that

would not require a lot of manual curation. And if on the other hand

only a subhierarchy of terms is desired, it is unclear to me it

should be difficult to do so while retaining the annotation

properties.

As a minor point, the definition

Class: electroporation

SubClassOf: 'cell permeabilization'

and has\_specified\_input some cell

and has\_participant some 'power supply'

seems suboptimal. Since most cells do not sruvive the electroporation

procedure, and a small minority actually successfully take up the

vector, one uses hundreds of thousands of cells. I realize that this

sort of thing is difficult to define in OWL, but perhaps there is a

better solution?

---Review #2---

Content revisions:

p.2, "In this instance, wholly importing such ontologies could

lead to inconsistencies or unintended inferences.": I am not

questioning the statement per se, but an actual example or a citation

of a piece of work that actually shows this would make this statement

more compelling than simply asking the reader to "trust us on

this".

p.5, Figure 2: 1) Shouldn't this figure precede all others, and be

put near the Policy and Implementation sections? 2) The diagram and

the figure legend depict the SPARQL endpoint as a required component

of a MIREOT mechanism. But isn't this really only an implementation

detail of the MIREOT implementation for OBI? Couldn't I easily have

an implementation that does not use a SPARQL endpoint, or are you

suggesting that one should really have one for the ontologies one

wishes to import from?

p.6, " and IAO developers therefore chose to MIREOT it"

This is the first time that MIREOT, an acronym, is used as a verb. I

think it's fine to introduce this as a convenient new short-hand

jargon term, but this should be done explicitly somewhere before

(maybe in Policy?) rather than surreptitiously.

p.7, first paragraph. I may be misreading or misunderstanding the

text here, but it looks like no solution, not even an outline of what

a solution could be, is presented. If this issue is currently

unresolvable, wouldn't that put a rather serious damper on

considerations of adoption? What would it take to find a solution? If

it is resolvable, restructure the paragraph so that this is clear.

p.7, second paragraph. There seems again be an implication that an

implementation of MIREOT must include a SPARQL endpoint. It seemed

earlier in the manuscript that this is an implementation detail; if

it is indeed pretty much required for a sound implementation, that

should be made clear early on.

p.7, " correct inference using the external classes is only

guaranteed if the full

ontology, or a module, is imported." It is not clear to me why

that has to be true. Provided that the imported assertions are

correct, how is it possible that these imply something in the target

ontology that they would not imply in the source ontology? It is of

course possible that the target ontology contains assertions that are

in conflict with not imported assertions in the source ontology, but

even if those conflicting assertions were imported, wouldn't the

result only be conflict, but not "correct" inferences? I

would in fact argue that if there can be no expectations in regard to

correctness of inferences, the practical appeal of MIREOT would be

substantially lowered. Please clarify if the statement in the text is

correct, otherwise revise.

p.7, "In adding axioms, such as the subclass axiom when

importing the external term, the aim is to only assert true

statements." Why? I can imagine why (false assertions have a

higher chance of contradiction in the source ontology?), but this

should be explained rather than leaving the guesswork to the reader.

p.7, " In our experience with the better OBO ontologies, the

denotation of the term,

as explained in the de&#64257;nition or documentation, is clearer

and more correct than the axiomatization." What are the

"better OBO ontologies", and what makes them better?

Besides, the sentences doesn't make sense to me. How can something be

less or more correct in logic reasoning, and how can a free-text

definition be logically more correct than axiomatic statements?

p.7, " If additional restrictions are required"

Restrictions such as? Not sure what you mean here.

p.7, "When deciding to import an external term the textual

de&#64257;nition is reviewed and, if required, discussion with

the original editor is undertaken." Why? This seems to be a

reaction or resolve to an encountered issue that is left unsaid.

Explicitly state what motivated this.

p.7, " As we are importing from OBO Foundry candidate ontologies

we have a community process for monitoring change" This sounds

like people not importing from OBO Foundry candidate ontologies are

going to be out of luck re: MIREOT. Are you indeed recommending that

for now MIREOT is only practicable between OBO Foundry and its

candidate ontologies? If so, this should be stated, along with why

this is so.

p.7, "The current implementation of the MIREOT guidelines relies

on command-line scripts, making it dif&#64257;cult for some

curators to use." Be more specific about what the things or

capabailities are that, if a curator lacks them, will make it

difficult to use.

Minor typographical and stylistic revisions:

p.1, " While it appears that building upon existing vocabularies

is the best way to proceed,": break paragraph

p.1, "mechanism owl:imports": unnecessary jargon in the

introduction (unless non-OWL experts need not read the article - then

say so in the abstract).

p.2, "making direct OWL imports of such resources

impractical": redundant with the preceding sentence.

p.2, "when imported by an other ontology": another, not an

other

p.2, "This solution allows developers to pick only pieces of the

source ontology (and thus overcome size issues) without losing any

reasoning power.": Maybe this is nit-picking, but the developers

\*do\* lose reasoning power, just that the loss is in areas that are not

of interest and hence don't matter.

p.2, "and the logical axioms need to be accurate.": This

suggests that there are logical axioms that are inaccurate, which

sounds like an oxymoron. If it's not, what distinguishes a logical

axiom that is accurate from one that is inaccurate?

p.2, first paragraph: Are "slims sensu OBO" also ontology

modules? If yes, this should probably be mentioned, as a reader from

the OBO community will surely wonder about that. In fact, if OBO

slims are not, or not strictly speaking, ontology modules, that

should probably be clarified therefore, too.

p.2, "When a term's changes meaning": term, not term's

p.3, "The logical URI" (3 times): What is the difference

between a "logical URI" and a "normal URI"? Use a

different term, or explain what criteria the URI needs to meet in

order to be a logical URI.

p.4, Figure 1: Don't the rdf: and alias: prefixes have to be defined

in the prefix section?

p.4, " instead of creating an other class denoting the same

entity": another, not an other

p.4, "This class can then be used in turn to import other

classes as needed." This is confusing. Isn't what you are really

trying to say here that an imported term can subsequently be chosen as

the parent of another imported term?

p.4, "More generally, additional axioms may be used to relate

members of the class to other entities in the ontology." How is

this different from other terms in the ontology? Or in other words,

it's not clear what is noteworthy about this statement, so try to

rephrase to make it more obvious.

p.5, "which are in turn mapped from the NCBItaxonomy." You

probably mean the NCBI taxonomy \*ontology\*? BTW this ontology is not

maintained nor endorsed by NCBI, and so should be cited with its

URL.

p.5, "The root term of the NCBI taxonomy is an example of

term": of \*a\* term

p.5, "we didn't want to include": did not instead of

didn't. This repeats several times in the sentence.

p.5, "we decided to retrieve all its superclasses as well up to

speci&#64257;c levels (Archaea, Bacteria, Eukaryota and Viruses)

of the NCBI taxonomy." Should add that this is shown in the

SPARQL query in Figure 3, otherwise this is lost on the reader until

the figure is encountered.

p.6, " Note that the graph

<<http://purl.org/science/graph/obo/NCBITaxon>>

contains the source ontology, but the full store includes inferred

subClassOf triples." I think I know what you mean here, but it

is confusing what the "full store" is and where it comes

from. I suggest rewording to clarify.

p.6, "For example, consider the case of IAO developers requiring

import of the term investigation." Don't use an example in place

of stating the issue that you are presenting an example for. Rather,

state the issue in general terms, then present the specific example

for illustration.

p.7, " a speci&#64257;cation of which Resource Description

Framework (RDF) graph (RDF/XML Syntax Speci&#64257;cation) the

term originally belonged to is required. " Move "is

required" to after "a specification", and replace

"of which" with "to which", and delete the final

"to".

p.7, " and are &#64258;exible enough to adjust and

update" What is the subject of the verb "are"? The

only plural candidate is "terms", which doesn't sound like

it is the one you want here. Maybe revise the second part of the

sentence to make clear what needs to be flexible enough?

---Review #3---

This paper presents a very important and practical technique that will

greatly benefit efforts to scale up the size of ontologies, increase

collaboration, and avoid reduplication of effort in constructing

ontologies.  I believe MIREOT represents an important early step in

what may become a suite of next-generation tools for easily importing

and reasoning with terms from external resources (potentially, even

non-OWL resources).

Just a few comments (all minor):

p.1 identifier mapping systems are not only "error prone",

but also create a new system that must be maintained, debugged, and

evolved...as such MIREOT has a great advantage that it is not an

outside software system that needs its own software lifecycle, but

rather, it is built out of the same formalism (OWL) as the ontology

itself.

p.2 It would be good to show quantitative benchmark data (or ref

papers) for how many assertions are needed before tools like Protege

and Pellet begin to deteriorate/crash.

p.3 Oftentimes there will be a request made for a particular term in

an existing ontology, but until the term is added, it will not have

an id...does MIREOT support a "NoIDYet" option that might

be used once an external group has agreed to add the term (but, say,

doesn't have a good definition for it yet)

p.6 Fig 3, It seems to me that exhaustively filtering unwanted

superclasses via a list of disjuncts is a very heavy burden and

unmaintainable for very complicated ontologies.  It wasn't clear to

me whether the creation of the filter statement was automated (i.e.,

generated from the script).  My particular concern is when one is

importing from an ontology with good terms and definitions, but whose

structure is not stable or known by the importers.

p.7 Just speculation, but perhaps an RSS update mechanism could be

used to keep the SPARQL endpoint synced to the latest ontologies

p.7 Ideally, the source ontology would be able to discover when the

importing ontology is making axiomatic assertions about its terms.

Again, this is speculation and might require some message

passing/update mechanism.

I thought the use cases were realistic and the technical limitations were clearly stated.  Great paper.