Evaluation results

There are three levels of importance in pitfalls according to their impact on the ontology:
- **Critical** It is crucial to correct the pitfall. Otherwise, it could affect the ontology consistency, reasoning, applicability, etc.
- **Important** Though not critical for ontology function, it is important to correct this type of pitfall.
- **Minor** It is not really a problem, but by correcting it we will make the ontology nicer.

Pitfalls detected:

Results for P04: Creating unconnected ontology elements. 1 case   1 case   **Minor**

Ontology elements (classes, object properties and datatype properties) are created isolated, with no relation to the rest of the ontology.

• This pitfall appears in the following elements:
› http://purl.obolibrary.org/obo/BFO_0000001

Results for P07: Merging different concepts in the same class.   3 cases   **Minor**

A class whose name refers to two or more different concepts is created.

• This pitfall appears in the following elements:
› https://w3id.org/dpv/dpv-owl#ResearchAndDevelopment
› https://w3id.org/dpv/dpv-owl#ImproveExistingProductsAndServices
› https://w3id.org/dpv/dpv-owl#FraudPreventionAndDetection

Results for P08: Missing annotations.   77 cases   **Minor**

This pitfall consists in creating an ontology element and failing to provide human readable annotations attached to it. Consequently, ontology elements lack annotation properties that label them (e.g. rdfs:label, lemon:LexicalEntry, skos:prefLabel or skos:altLabel) or that define them (e.g. rdfs:comment or dc:description). This pitfall is related to the guidelines provided in [5].

• The following elements have neither rdfs:label or rdfs:comment (nor skos:definition) defined:
› http://purl.obolibrary.org/obo/RO_0000059
› http://purl.obolibrary.org/obo/RO_0000053

• The following elements have neither rdfs:comment or skos:definition defined:
› http://umaine.edu/oppo/core/v1#DataRestorationPractice
› http://purl.obolibrary.org/obo/BFO_0000141
› http://purl.obolibrary.org/obo/OMRSE_00000051
› http://purl.obolibrary.org/obo/IAO_0000178
› http://purl.obolibrary.org/obo/BFO_0000020
› http://purl.obolibrary.org/obo/BFO_0000015
› http://purl.obolibrary.org/obo/BFO_0000006
› http://purl.obolibrary.org/obo/BFO_0000004
› http://purl.obolibrary.org/obo/BFO_0000040
› http://umaine.edu/oppo/core/v1#IdentityPersonalData

- › http://umaine.edu/oppo/core/v1#FirstPartyDataRecipientRole
- › http://umaine.edu/oppo/core/v1#MinorDataSubjectRole
- › http://purl.obolibrary.org/obo/BFO_0000017
- › http://umaine.edu/gdpr#HealthData
- › http://purl.obolibrary.org/obo/BFO_0000002
- › http://purl.obolibrary.org/obo/BFO_0000140
- › http://umaine.edu/oppo/core/v1#ThirdPartyDataRecipientRole
- › http://purl.obolibrary.org/obo/BFO_0000031
- › http://purl.obolibrary.org/obo/BFO_0000003
- › http://purl.obolibrary.org/obo/IAO_0000027
- › http://purl.obolibrary.org/obo/NCBITaxon_9606
- › http://umaine.edu/gdpr#GDPRMinorDataSubject
- › http://purl.obolibrary.org/obo/OMRSE_00000048
- › http://umaine.edu/oppo/core/v1#CryptographicHashingMechanism
- › http://umaine.edu/oppo/core/v1#DataAccessPractice
- › http://purl.obolibrary.org/obo/OMRSE_00000023
- › http://umaine.edu/oppo/core/v1#AuditingPractice
- › http://purl.obolibrary.org/obo/OBI_0000245
- › http://purl.obolibrary.org/obo/IAO_0000030
- › http://purl.obolibrary.org/obo/BFO_0000011
- › http://umaine.edu/gdpr#HealthStatusData
- › http://purl.obolibrary.org/obo/BFO_0000023
- › http://purl.obolibrary.org/obo/BFO_0000035
- › http://umaine.edu/gdpr#SensitiveData
- › http://purl.obolibrary.org/obo/BFO_0000029
- › http://purl.obolibrary.org/obo/BFO_0000016
- › http://purl.obolibrary.org/obo/BFO_0000144
- › http://purl.obolibrary.org/obo/BFO_0000148
- › http://purl.obolibrary.org/obo/BFO_0000026
- › http://purl.obolibrary.org/obo/BFO_0000008
- › http://purl.obolibrary.org/obo/BFO_0000001
- › http://purl.obolibrary.org/obo/BFO_0000034
- › http://purl.obolibrary.org/obo/BFO_0000024
- › http://purl.obolibrary.org/obo/BFO_0000038
- › http://purl.obolibrary.org/obo/BFO_0000028
- › http://purl.obolibrary.org/obo/BFO_0000019
- › http://purl.obolibrary.org/obo/BFO_0000147
- › http://purl.obolibrary.org/obo/BFO_0000182
- › http://purl.obolibrary.org/obo/BFO_0000027
- › http://purl.obolibrary.org/obo/BFO_0000009
- › http://purl.obolibrary.org/obo/BFO_0000145
- › http://purl.obolibrary.org/obo/BFO_0000142
- › http://purl.obolibrary.org/obo/BFO_0000030
- › http://purl.obolibrary.org/obo/BFO_0000018
- › http://purl.obolibrary.org/obo/BFO_0000146
- › http://www.w3.org/2006/time#January
- › http://umaine.edu/oppo/core/v1#hasStorageLocation
- › http://umaine.edu/oppo/core/v1#hasStorageEntity
- › http://umaine.edu/oppo/core/v1#hasDurationDescription
- › http://umaine.edu/oppo/core/v1#actsIn
- › http://umaine.edu/oppo/core/v1#actsOn
- › http://umaine.edu/oppo/core/v1#hasDataPractice
- › http://umaine.edu/oppo/core/v1#hasPurpose
- › http://umaine.edu/oppo/core/v1#isProvidedBy
- › http://umaine.edu/oppo/core/v1#isReceivedBy
- › http://umaine.edu/oppo/core/v1#hasResponseDelay
- › http://umaine.edu/oppo/core/v1#allows
- › http://umaine.edu/oppo/core/v1#appliesTo
- › http://umaine.edu/oppo/core/v1#disallows
- › http://umaine.edu/oppo/core/v1#hasPolicy
- › http://umaine.edu/oppo/core/v1#hasSecurityMechanism
- › http://umaine.edu/oppo/core/v1#isAbout
- › http://umaine.edu/oppo/core/v1#isRecipientOf
- › http://umaine.edu/oppo/core/v1#hasResponseType
- › http://umaine.edu/oppo/core/v1#hasRequestType

Results for P11: Missing domain or range in properties.   8 cases   `Important`

Object and/or datatype properties without domain or range (or none of them) are included in the ontology.

• This pitfall appears in the following elements:
> http://www.w3.org/2006/time#hasDuration
> http://www.w3.org/2006/time#hasTime
> http://www.w3.org/2006/time#hasDurationDescription
> http://purl.obolibrary.org/obo/RO_0000053
> http://purl.obolibrary.org/obo/RO_0000059
> http://www.w3.org/2006/time#day
> http://www.w3.org/2006/time#year
> http://www.w3.org/2006/time#month

• **Tip:** Solving this pitfall may lead to new results for other pitfalls and suggestions. We encourage you to solve all cases when needed and see what else you can get from OOPS!

Results for P13: Inverse relationships not explicitly declared.   37 cases   `Minor`

This pitfall appears when any relationship (except for those that are defined as symmetric properties using owl:SymmetricProperty) does not have an inverse relationship (owl:inverseOf) defined within the ontology.

• OOPS! has the following suggestions for the relationships without inverse:
> http://www.w3.org/2006/time#intervalIn could be inverse of http://www.w3.org/2006/time#intervalDisjoint
> http://www.w3.org/2006/time#intervalDisjoint could be inverse of http://www.w3.org/2006/time#intervalEquals

• Sorry, OOPS! has no suggestions for the following relationships without inverse:
> http://umaine.edu/oppo/core/v1#hasStorageLocation
> http://umaine.edu/oppo/core/v1#hasStorageEntity
> http://umaine.edu/oppo/core/v1#hasDurationDescription
> http://umaine.edu/oppo/core/v1#actsIn
> http://umaine.edu/oppo/core/v1#actsOn
> http://umaine.edu/oppo/core/v1#hasDataPractice
> http://umaine.edu/oppo/core/v1#hasPurpose
> http://umaine.edu/oppo/core/v1#isProvidedBy
> http://umaine.edu/oppo/core/v1#hasResponseDelay
> http://umaine.edu/oppo/core/v1#allows
> http://umaine.edu/oppo/core/v1#appliesTo
> http://umaine.edu/oppo/core/v1#disallows
> http://umaine.edu/oppo/core/v1#hasPolicy
> http://umaine.edu/oppo/core/v1#hasSecurityMechanism
> http://umaine.edu/oppo/core/v1#isAbout
> http://purl.obolibrary.org/obo/RO_0000059
> http://purl.obolibrary.org/obo/RO_0000053
> http://www.w3.org/2006/time#timeZone
> http://www.w3.org/2006/time#hasDurationDescription
> http://www.w3.org/2006/time#inTemporalPosition
> http://www.w3.org/2006/time#dayOfWeek
> http://www.w3.org/2006/time#hasTime
> http://www.w3.org/2006/time#hasDuration
> http://www.w3.org/2006/time#hasTRS
> http://www.w3.org/2006/time#hasBeginning
> http://www.w3.org/2006/time#monthOfYear
> http://www.w3.org/2006/time#hasDateTimeDescription
> http://www.w3.org/2006/time#inDateTime
> http://www.w3.org/2006/time#inTimePosition
> http://www.w3.org/2006/time#hasEnd
> http://www.w3.org/2006/time#hasTemporalDuration
> http://www.w3.org/2006/time#unitType
> http://www.w3.org/2006/time#inside

Results for P22: Using different naming conventions in the ontology.   Ontology* Minor

The ontology elements are not named following the same convention (for example CamelCase or use of delimiters as "-" or "_") . Some notions about naming conventions are provided in [2].

*This pitfall applies to the ontology in general instead of specific elements.

Results for P24: Using recursive definitions.   2 cases Important

	Pitfall Catalogue	Service	Feedback	About Us

its owl:equivalentClass or rdfs:subClassOf axioms; (c) the appearance of an object property in its rdfs:domain or range rdfs:range definitions; or (d) the appearance of a datatype property in its rdfs:domain definition.

• This pitfall appears in the following elements:
› http://www.w3.org/2006/time#Instant
› http://www.w3.org/2006/time#Interval

Results for P30: Equivalent classes not explicitly declared.   2 cases Important

This pitfall consists in missing the definition of equivalent classes (owl:equivalentClass) in case of duplicated concepts. When an ontology reuses terms from other ontologies, classes that have the same meaning should be defined as equivalent in order to benefit the interoperability between both ontologies.

• The following classes might be equivalent:
› http://purl.obolibrary.org/obo/BFO_0000023, http://purl.obolibrary.org/obo/BFO_0000034
› http://purl.obolibrary.org/obo/BFO_0000023, http://purl.obolibrary.org/obo/BFO_0000034, https://w3id.org/dpv/dpv-owl#Purpose

Results for P41: No license declared.   Ontology* Important

The ontology metadata omits information about the license that applies to the ontology.

*This pitfall applies to the ontology in general instead of specific elements.

Suggestions or warnings:

SUGGESTION: symmetric or transitive object properties| 16 cases   ⌄

According to the highest importance level of pitfall found in your ontology the conformace bagde suggested is "Important pitfalls" (see below). You can use the following HTML code to insert the badge within your ontology documentation:

```
<p>
<a href="http://oops.linkeddata.es">
<img src="http://oops.linkeddata.es/resource/image/oops_important.png"
alt="Important pitfalls were found" height="69.6" width="100" /></a>
</p>
```

References

[1] Aguado-De Cea, G., Montiel-Ponsoda, E., Poveda-Villalón, M., and Giraldo-Pasmin, O.X. (2015). ⌄

[2] Noy, N. F., McGuinness, D. L., et al. (2001). ⌄

[3] Gómez-Pérez, A. (1999). ⌄

[4] Montiel-Ponsoda, E., Vila Suero, D., Villazón-Terrazas, B., Dunsire, G., Escolano Rodríguez, E., Gómez-Pérez, A. (2011). ⌄

[5] Vrandecic, D. (2010). ⌄

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[7] Rector, A., Drummond, N., Horridge, M., Rogers, J., Knublauch, H., Stevens, R., Wang, H., and Wroe, C. (2004). ⌄

[8] Hogan, A., Harth, A., Passant, A., Decker, S., and Polleres, A. (2010). ⌄

[9] Archer, P., Goedertier, S., and Loutas, N. (2012). ⌄

[10] Bernes-Lee Tim. (2006). ⌄

[11] Heath, T. and Bizer, C. (2011). ⌄

[12] Vatant, B. (2012). ⌄

Enter your ontology to scan:

```
<?xml version="1.0" encoding="utf-8" ?>
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
     xmlns:owl="http://www.w3.org/2002/07/owl#"
     xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
     xmlns:skos="http://www.w3.org/2004/02/skos/core#">

<owl:Ontology rdf:about="http://umaine.edu/oppo/core/v1#">
  <owl:imports rdf:resource="https://raw.githubusercontent.com/SanondaDattaGupta/OPPO-
```

☐ Uncheck this checkbox if you don't want us to keep a copy of your ontology.

Scan

Advanced evaluation

How to cite OOPS!

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BibTex:

```
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title={{OOPS! (OntOlogy Pitfall Scanner!): An On-line Tool for Ontology Evaluation}},
author={Poveda-Villal{\'o}n, Mar{\'i}a and G{\'o}mez-P{\'e}rez, Asunci{\'o}n and Su{\'a}rez-Figueroa, Mari Ca
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