

# Nanopublications

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Jan Velterop



• What

• Why



# Definition

- A nanopublication is a single, machine-readable, citable scientific assertion along with associated provenance.
- Nanopublications come with the idea that their authors/providers may gain credit for the use of these assertions by others



# Definition

- 'Nano' refers just to its 'smallness'
- 'Publication' refers to its citeability; a nanopublication is the smallest possible textual publication that may be scientifically meaningful



- Each nanopublication has a unique URI
- Each one has a time stamp
- And one or more provenance labels (author(s), article, journal, database, patent)



## Nanopublication

**Nanopublication ID**

**Integrity  
Key**

**Assertion**

s1 p1 o1 .  
o1 p2 o2 .

**Supporting**

s2 p3 o3 .  
s3 p4 o4 .  
o4 p5 o5 .

**Provenance**



# Nanopublication Schema

- A statement part, containing the actual scientific assertion
- A supporting part, containing descriptive properties about the assertion
- A provenance part: the origin of the assertion
- An integrity key, which ensures authenticity and versioning



The basic building block of the nanopublication is the 'triple'

Subject - Predicate - Object



unambiguous 'entities' or 'concepts'  
have URIs



- No strict criteria (impossible, and inhibitory to uptake) for the contents of nanopublications
- Some clear minimal guidelines though:
  - Single scientific assertion (does not need to be a single triple)
  - Supporting evidence can be used to note cell type, assay method, concentration etc.
  - “Bags” of entities also allowed. (a human-readable statement and the lists of entities mentioned without encoding their full causal relationships).



- The entities have URIs.
- This allows for disambiguation of synonyms & homonyms, so that nanopublications can reflect the conceptual content of an assertion, irrespective of the actual words used.



- What
- Why



```

wiki.org/index.php/#85094810"/>
eptwiki.org/index.php/#121646370"/>
conceptwiki.org/index.php/#43065817"/>
b.org/viruses/av/Heliolithis_virescens_insect">

```

```

<cwa:author rdf:resource="http://people.conc
<cwa:provenance rdf:resource="http://article.
<cwa:timestamp>1240641052059</cwa:timesta
<cwa:annotated_by rdf:resource="http://peop
<cwa:annotation rdf:resource="http://www.vi
</rdf:Description>

```

```

<rdf:Description rdf:about="http://www.nbic.nl/cwa/relation/#26277419#13817745">
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<cwa:direction>1.2</cwa:direction>
<cwa:strength>1.0</cwa:strength>
<cwa:author rdf:resource="http://people.conceptwiki.org/index.php/#85094810"/>
<cwa:provenance rdf:resource="http://article.conceptwiki.org/index.php/#121646370"/>
<cwa:timestamp>1240641052059</cwa:timestamp>
<cwa:annotated_by rdf:resource="http://people.conceptwiki.org/index.php/#43065817"/>
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</rdf:Description>

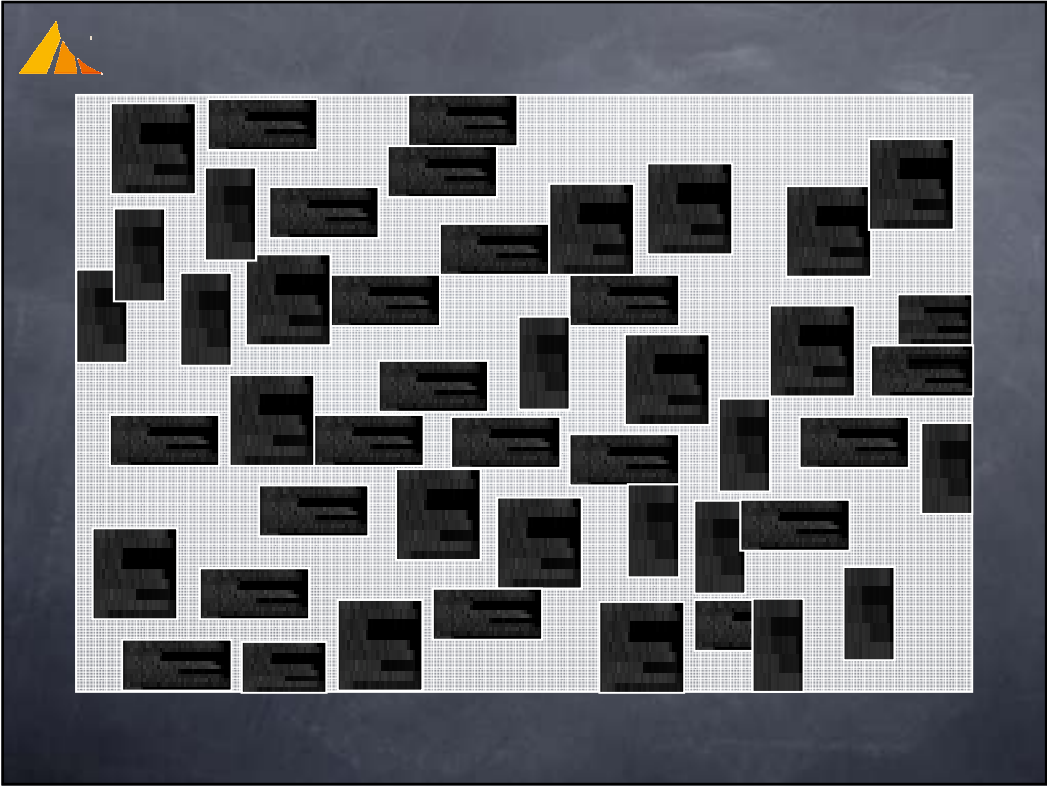
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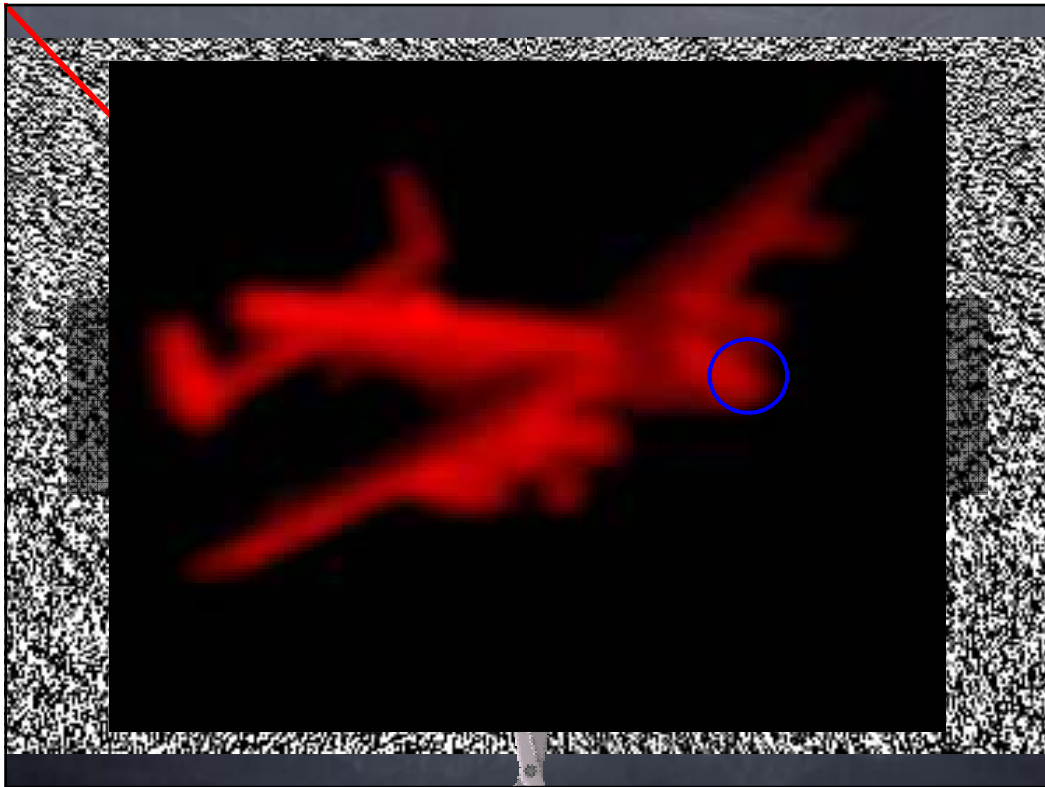
```

ation/#26277419#13817745">
ptwiki.org/index.php/#2121378"/>
g/index.php/#85094810"/>
ki.org/index.php/#121646370"/>
wiki.org/index.php/#43065817"/>
timestamp="1240641052059">

```







detail

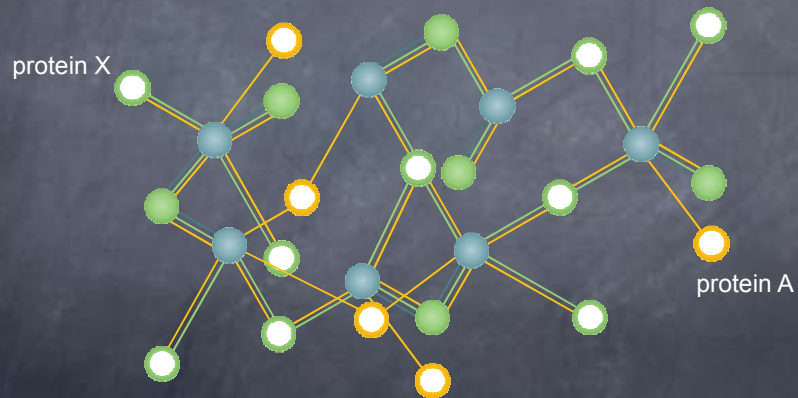






nanopublications (i.e. citations)

can also be used to reason



- Nanopublications do not – cannot – reflect full scientific reality in all its nuances
- But they help give direction, overview, hypothesis creation, etc.



- Nanopublications can be cited and thus may credit authors, journals, databases, publishers
- And they are 'linked' – at least linkable (URIs) – combatting the fragmentation of information that's the bane of science



- So it would be good if publishers were to extract and expose the nanopublications contained in their publications
- They conceptually 'link' data and literature, and foster citation of the literature