



# Using RDF(S) to provide multiple views into a single ontology

The Second International Workshop on the Semantic Web - SemWeb'2001

Workshop at WWW10

Hongkong, May 1, 2001

Santtu Toivonen, Sonera Corporation



# Contents

---

Introduction

RDF Triple

RDF Schema

Stating the problem

Proposal

Conclusions

# Introduction

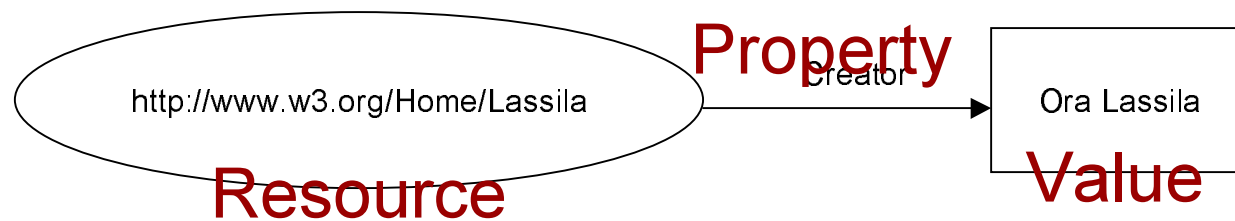
---

- Assumption: shared concept → shared ontology
  - → ontologies expand
    - → different views into large ontologies are of use
- RDF(S) as an intermediary layer
  - i.e. as domain-specific data "between" users and ontology
  - i.e. as a means to provide views into ontologies

# Starting point: the RDF triple

---

- Resource, Property, and Value

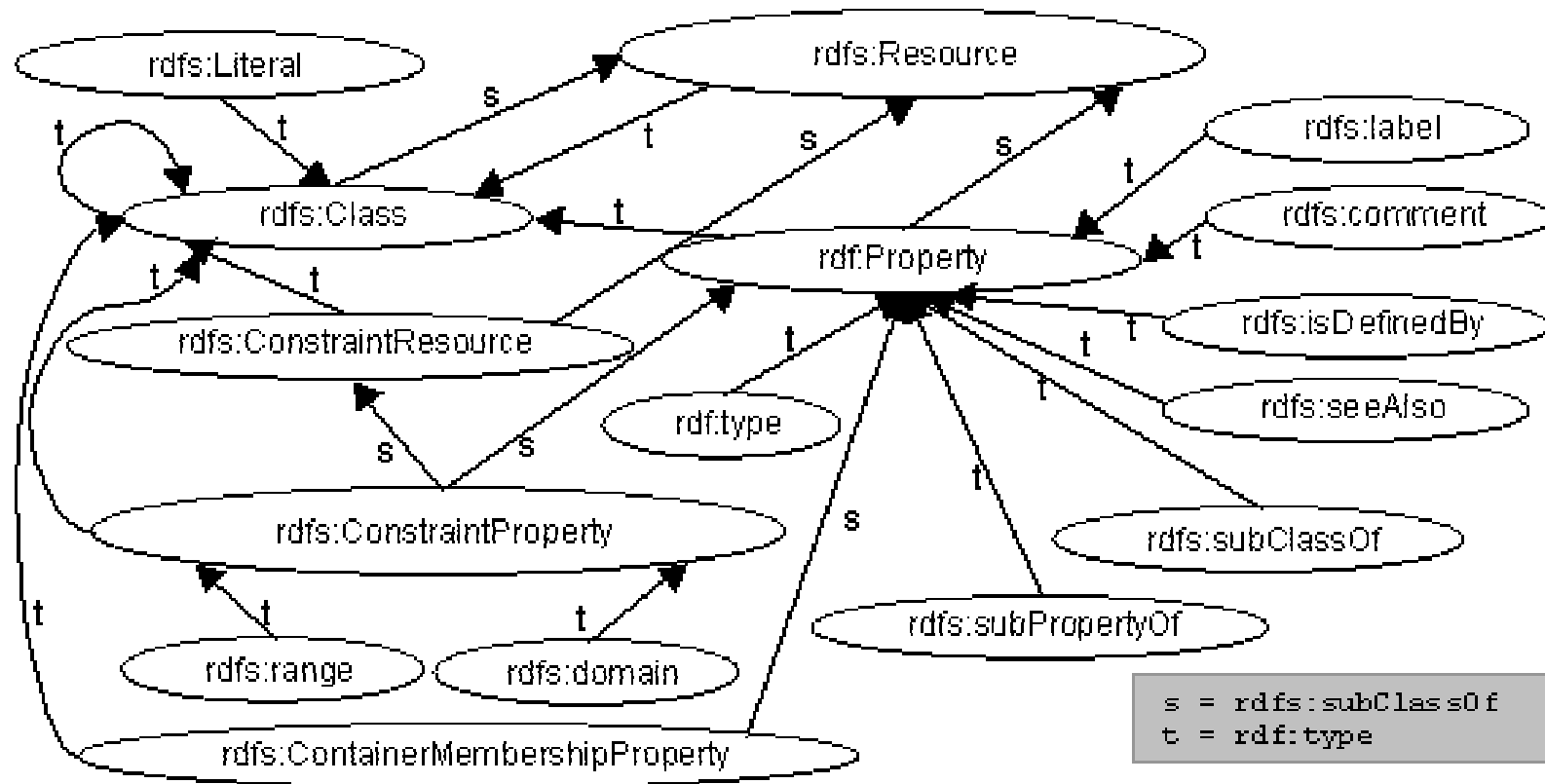


From: Lassila, O., and Swick, R.R. Resource description framework (RDF) model and syntax specification. Technical report, W3C, 1999. W3C Recommendation. <http://www.w3.org/TR/REC-rdf-syntax>.

- RDF/XML representation for that:

```
<rdf:RDF>
  <rdf:Description about="http://www.w3.org/Home/Lassila">
    <s:Creator>Ora Lassila</s:Creator>
  </rdf:Description>
</rdf:RDF>
```

# Class Hierarchy of RDF Schema



From: Brickley, D., and Guha, R.V. Resource description framework (RDF) schema specification. Technical report, W3C, 2000. W3C Candidate Recommendation. <http://www.w3.org/TR/rdf-schema>.

# Stating the Problem

---

- Fact: concepts manifest themselves sometimes as definienda (sing. definiendum), sometimes as definientia (sing. definiens)
  - `rdfs:Class` consisting of `rdfs:Resources`  
= definiendum; concept to be defined
  - `rdf:Property`  
= definiens; concept participating in definition

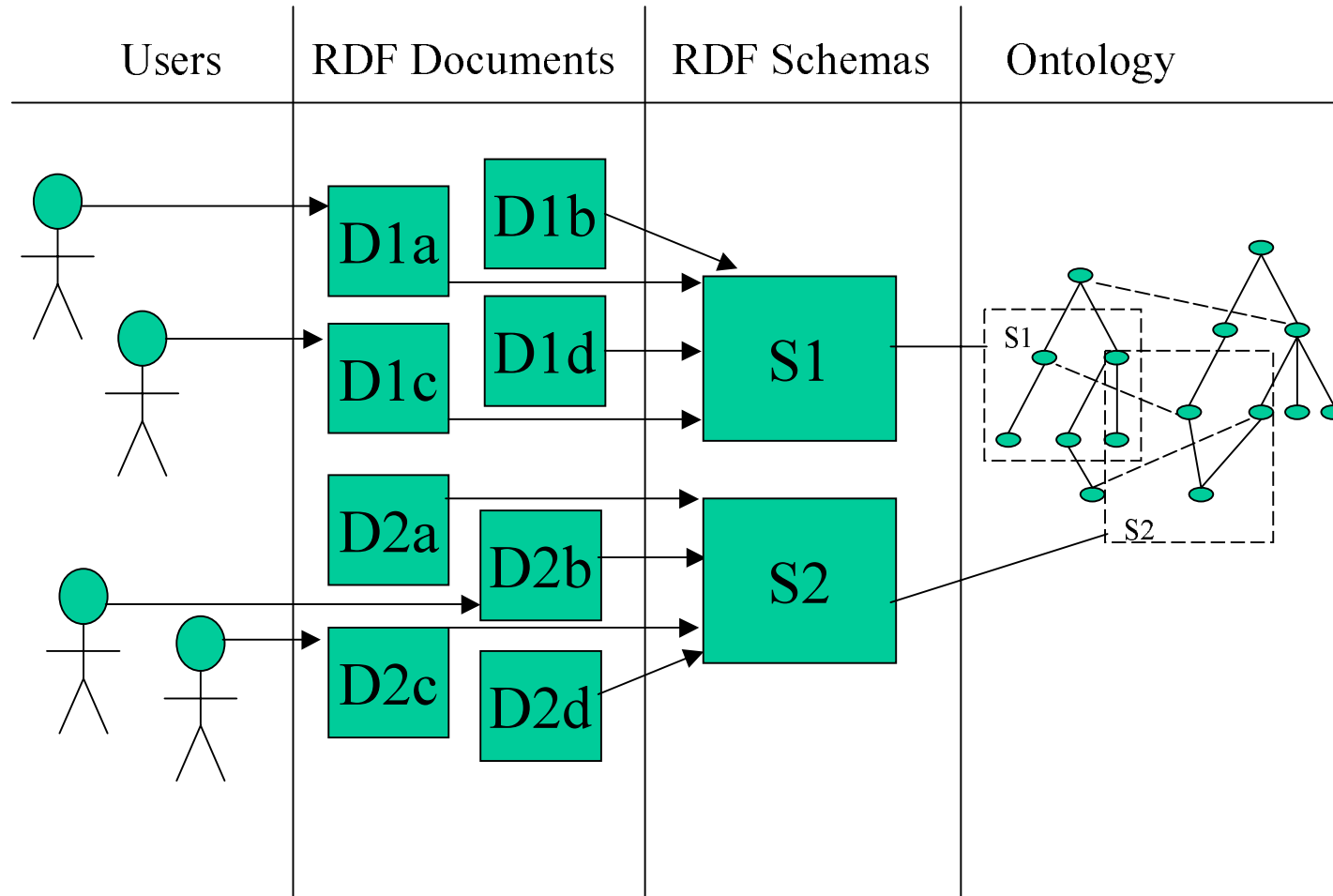
## Stating the Problem (2)

---

- Problem: RDF(S) forces one either
  - to explicitly decide whether a concept is `rdfs:Resource` of some `rdfs:Class` or `rdf:Property`
- or
  - to define all or some concepts twice; once as a definiendum and once as a definiens

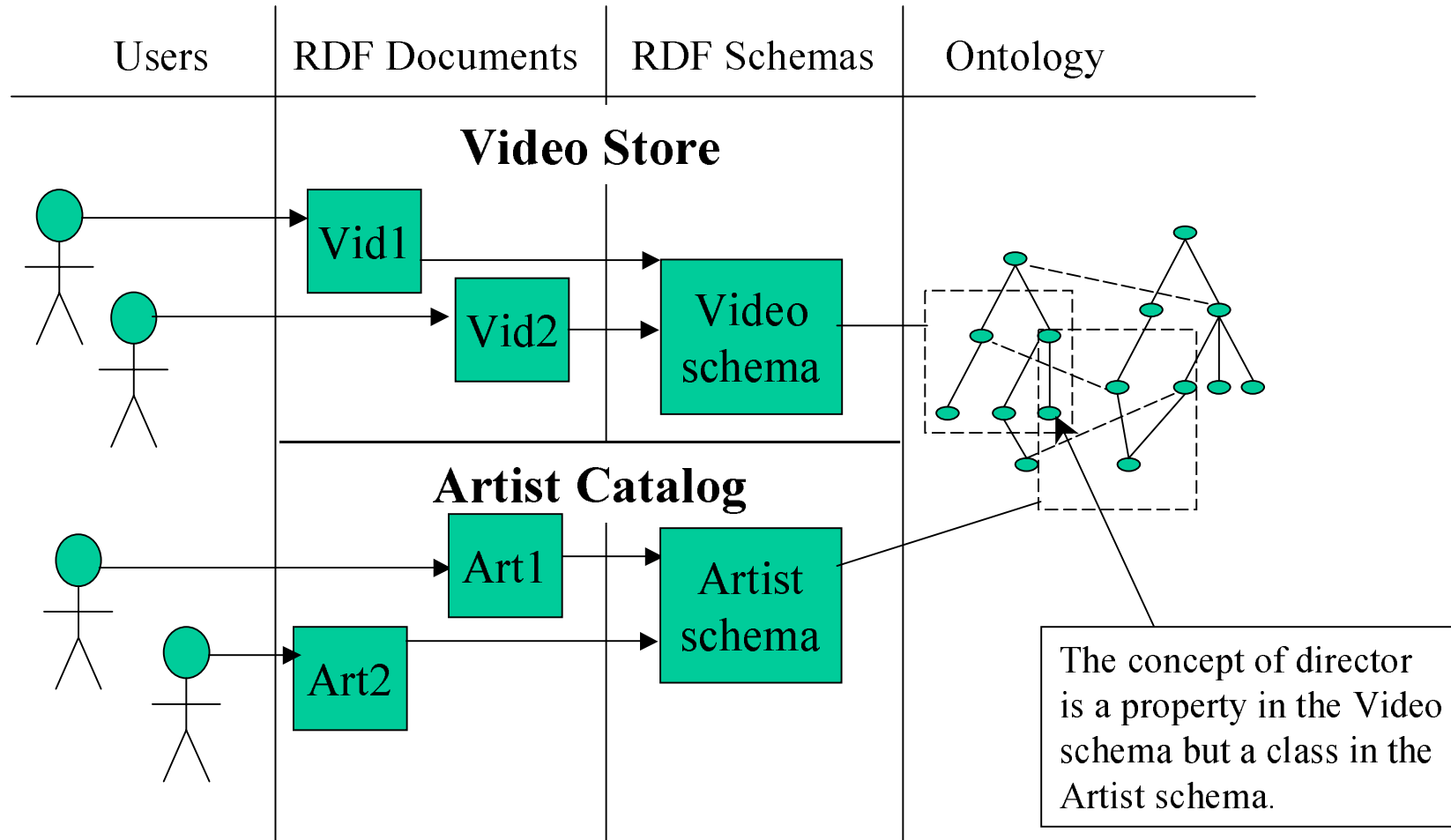
*Neither of these is desirable*

# Proposal – overview





# Proposal – an example



# Proposal – details

---

- separated ontology expressed in some structure other than RDF(S)
  - in a structure that does not divide concepts universally into definienda and definientia
- RDF Documents + schemas function as means to access that ontology from different viewpoints
  - a set of RDF Documents + one or more schemas together form a vocabulary for some domain (e.g. video store)

## Proposal – details (2)

---

- If two domains share a concept (e.g. director), they access the same ontology
- Different domains can use concepts in different **roles**, but the concepts themselves remain the same and independent of the domain-specific details
  - Artist Catalog uses director as a concept to be defined
  - Video Store uses director as a property participating in the definition of a concept called movie

# Conclusions

---

- RDF(S) functions **well** as a means to provide individual views into one ontology
- RDF(S) or any system with similar structure is **not** suitable for expressing potentially large ontologies themselves
  - due to the fact that RDF(S) forces one to decide whether some concept is definiendum or definiens
  - correcting this at other levels (e.g. DAML+OIL) is not desirable

Thank You!

---

Any Questions?

contact: [santtu.toivonen@sonera.com](mailto:santtu.toivonen@sonera.com)