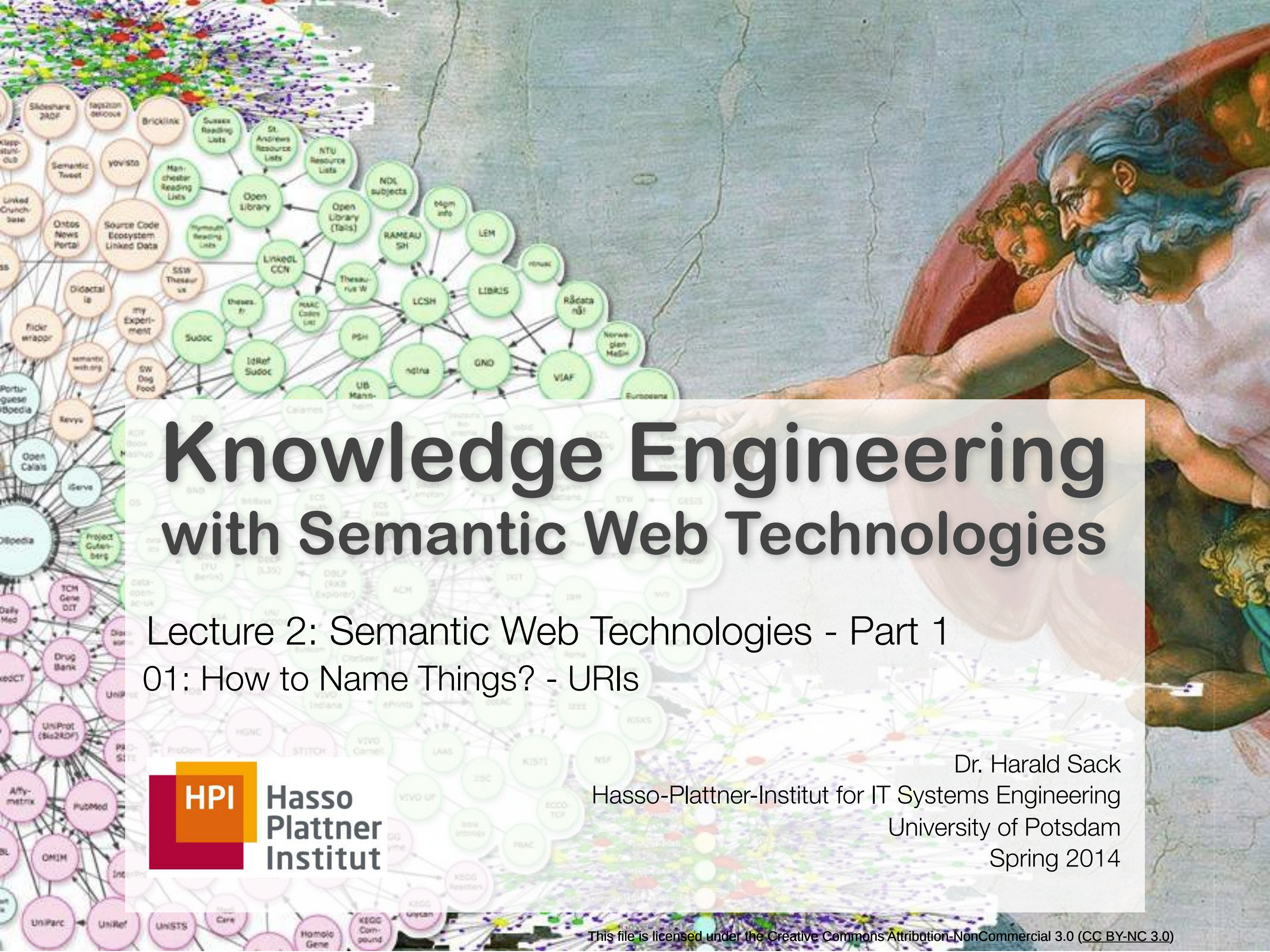




Knowledge Engineering with Semantic Web Technologies

Lecture 2: Semantic Web Technologies - Part 1
01: How to Name Things? - URIs



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University of Potsdam
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Lecture 2: Semantic Web Technologies - Part 1

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Semantic Web Technologies

Part 1

The Semantic Web Technology Stack (not a piece of cake...)

Most apps use only a subset of the stack

Querying allows fine-grained data access

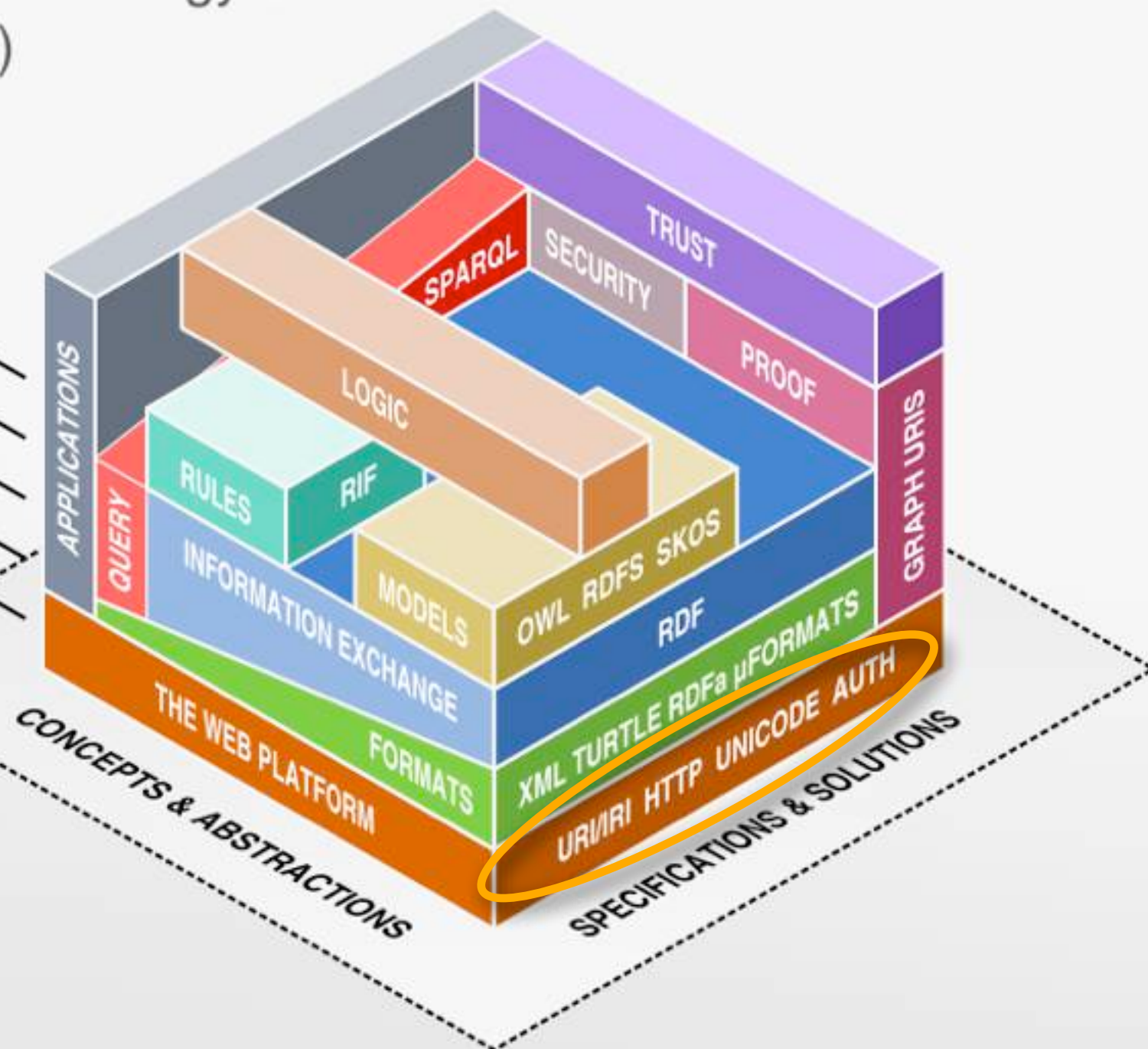
Standardized information exchange is key

Formats are necessary, but not too important

The Semantic Web is based on the Web

Linked Data uses a small
selection of technologies

LINKED DATA





01 How to Name Things? - URIs

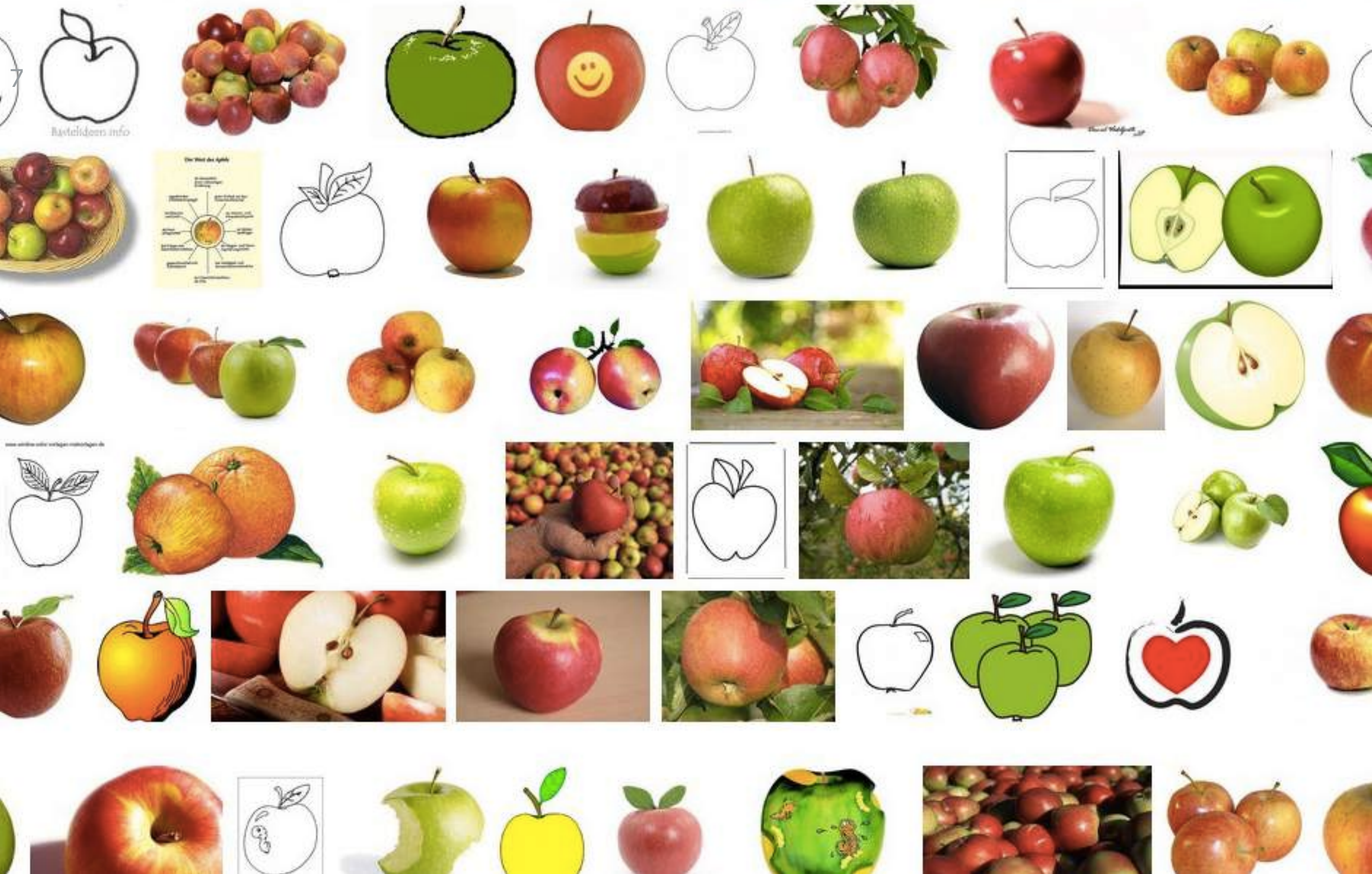
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What is this?

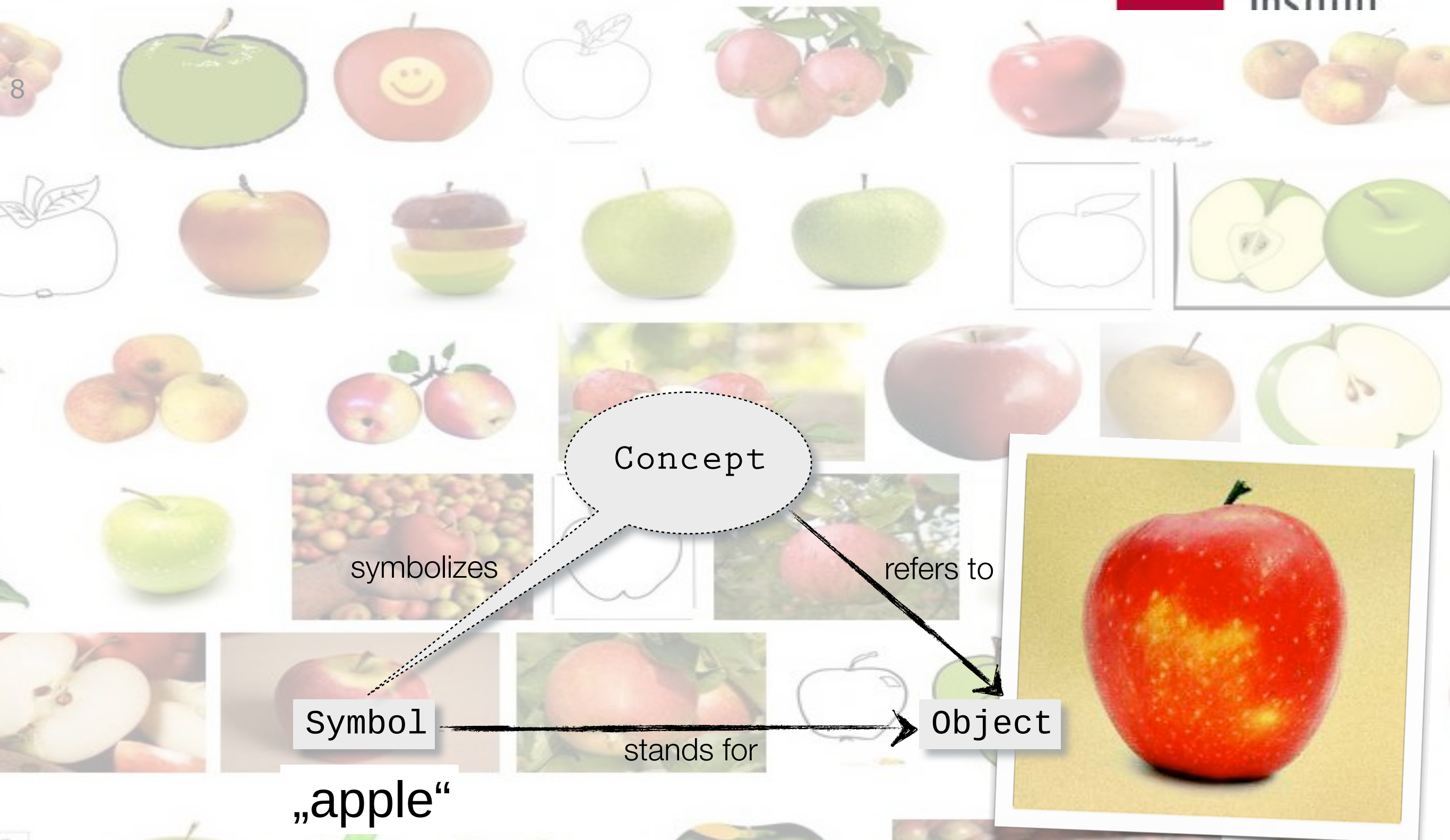




Ceci n'est pas une pomme



Semiotic Triangle



Ogden, Richards: Semiotic Triangle, 1923

Semiotic Triangle



shared concept

Concept

symbolizes

refers to

Symbol

Object

stands for

„apple“

Ogden, Richards: Semiotic Triangle, 1923

Semiotic Triangle



shared concept

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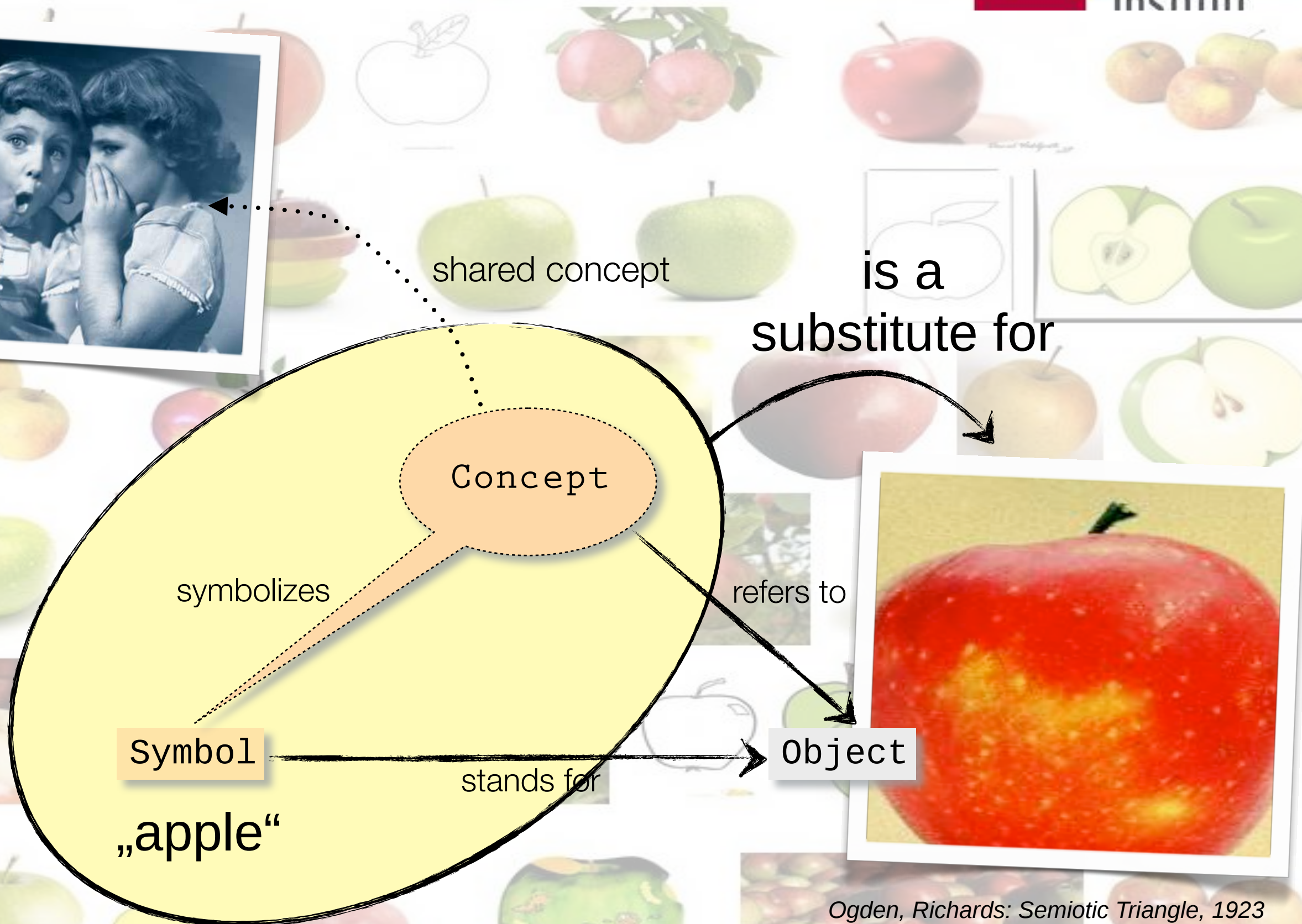
Object

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Ogden, Richards: Semiotic Triangle, 1923

Semiotic Triangle



Ogden, Richards: Semiotic Triangle, 1923

10

Uniform Resource Identifier

- different types of resource identifiers all constructed according to a uniform schema
- whatever may be identified via URI
- to distinguish one resource from another

Uniform Resource Identifier

- A **Uniform Resource Identifier** (URI) defines a simple and extensible schema for worldwide unique identification of abstract or physical resources (RFC 3986).

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 - Digital Object Identifier (DOI)



Resource

12

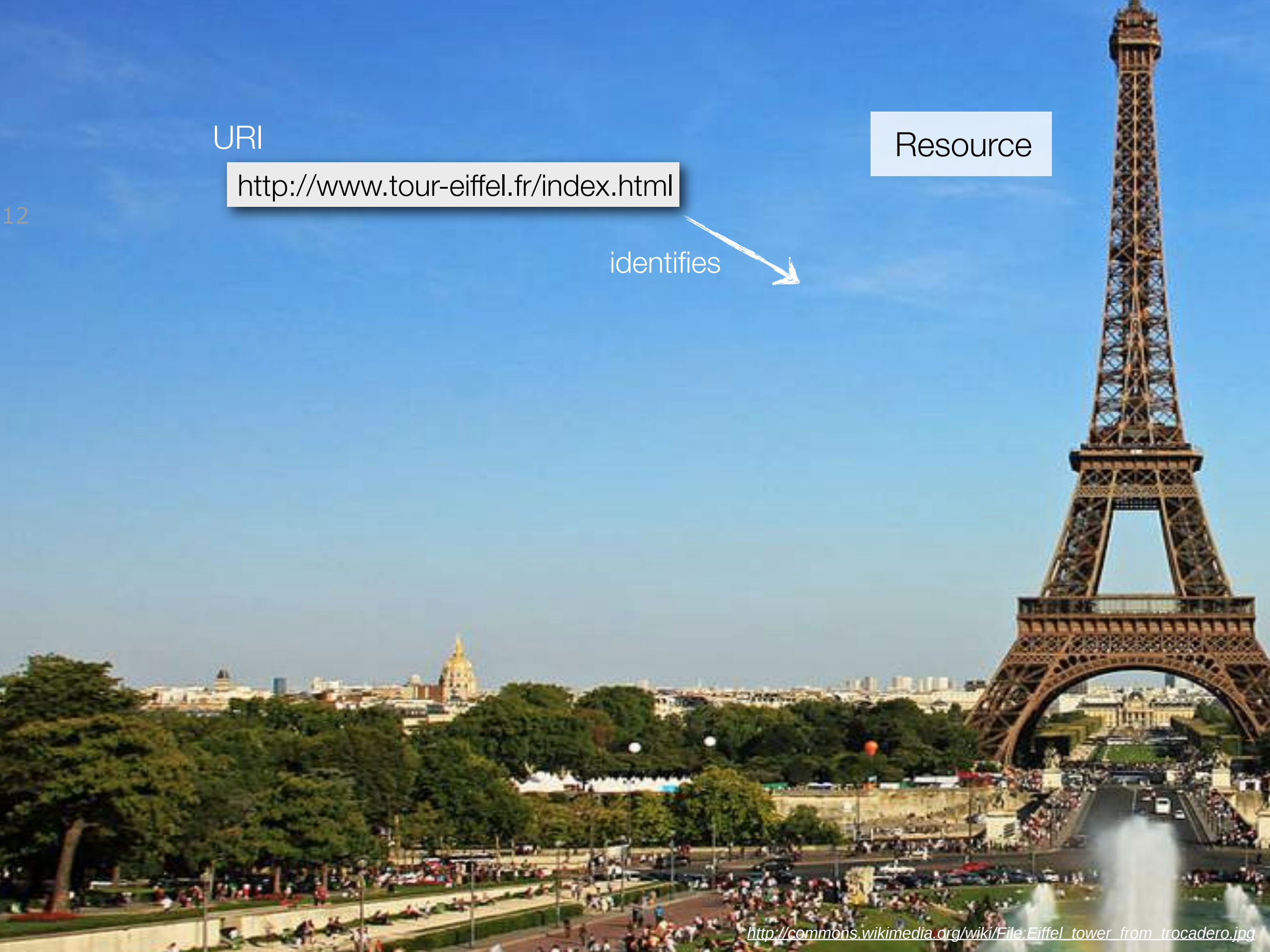


URI

<http://www.tour-eiffel.fr/index.html>

Resource

identifies



URI

`http://www.tour-eiffel.fr/index.html`

Resource

identifies

Representation

represents
(stands for)

Metadata:

Content-type: text/html

Data:

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01  
Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">
```

```
<html>
```

```
<head>
```

```
<title>Le site officiel de la Tour Eiffel</title>
```

```
...
```

```
</html>
```

Representation and Presentation

13

Metadata:

Content-type: text/html

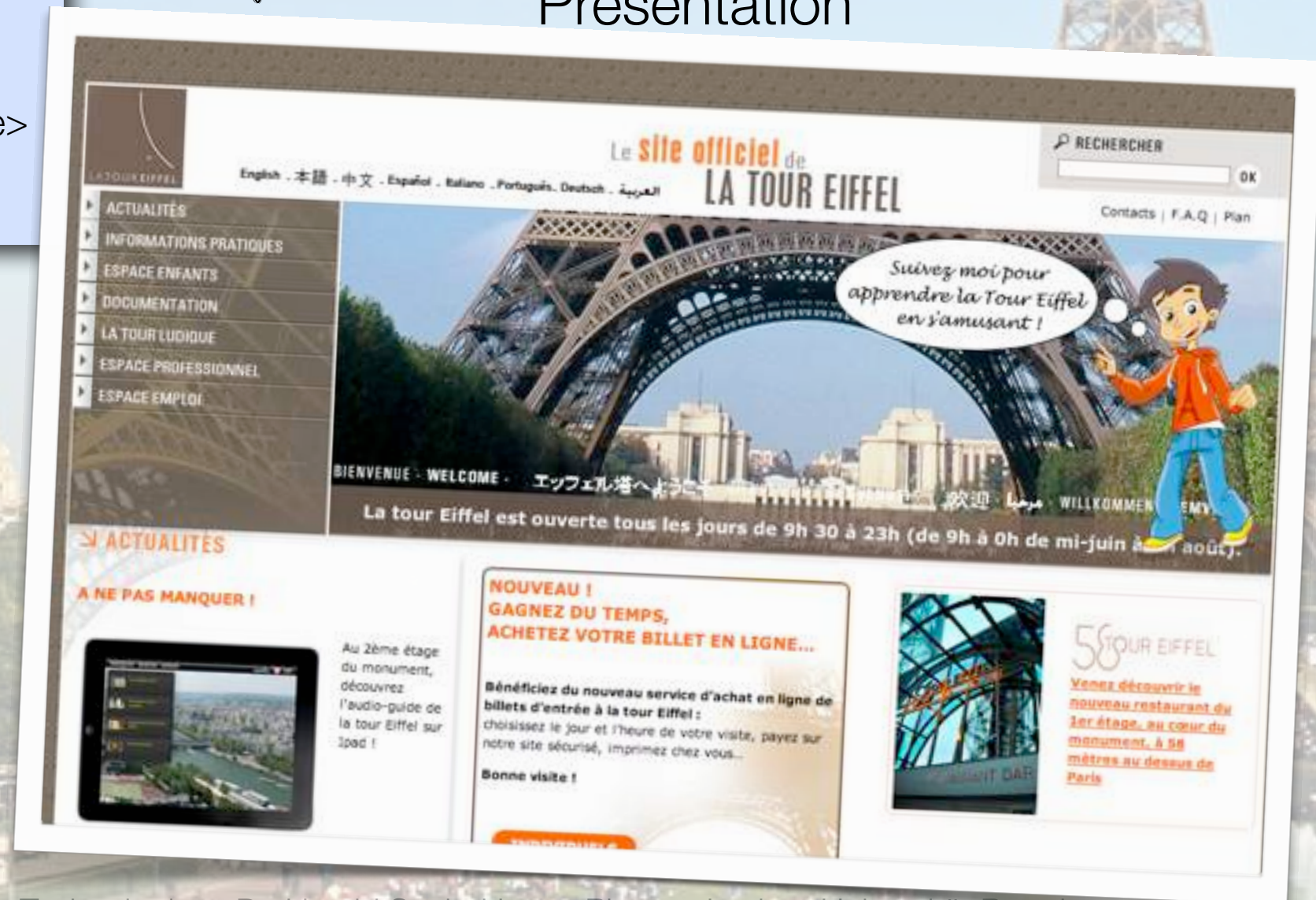
Data:

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD
HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<html>
  <head>
    <title>Le site officiel de la Tour Eiffel</title>
    ...
  </html>
```

defines

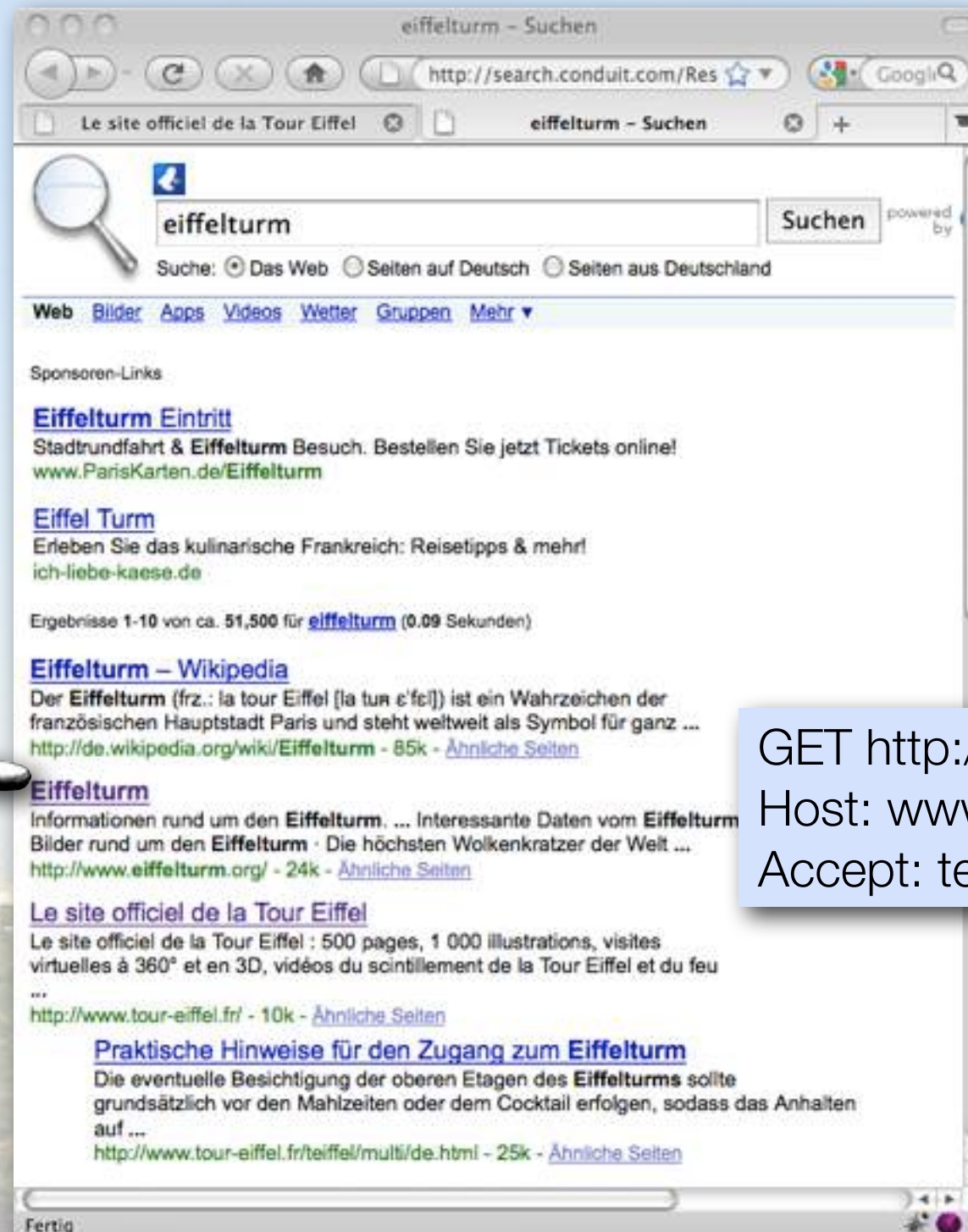
Presentation

Representation



HTTP Request / Response

14



Browser sends
HTTP Request

GET http://www.tour-eiffel.fr/index.html HTTP/1.1
Host: www.tour-eiffel.fr
Accept: text/html

User clicks

HTTP Request / Response

15

Browser sends **HTTP Request**

```
GET http://www.tour-eiffel.fr/index.html HTTP/1.1
Host: www.tour-eiffel.fr
Accept: text/html
```

Web Server
processes request

Web Server sends **HTTP Response**

```
HTTP/1.1 200 OK
Content-Length: 3134
Content-Type: text/html; charset=utf-8

<!DOCTYPE HTML PUBLIC "-//W3C//DTD
HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<html>
  <head>
    <title>Le site officiel de la Tour Eiffel</title>
    ...
  </html>
```

Browser interprets representation
and displays presentation



Designator and Designatum

16

Designator



Designatum

≠

The web page describes
(*designates*) the Eiffel Tower

The Eiffel Tower is described
(*designated*) by the web page





Ceci n'est pas une pipe.

René Magritte:
La trahison des images (1928)

- A **resource** can be described (*designated*) via **Metadata**
- Even if the resource itself cannot be delivered from the web server, probably its **representation** might be available that describes the resource sufficiently.



URI, Resource and Metadata

19

URI

`http://www.tour-eiffel.fr/index.html`

Resource:
Eiffel Tower

identifies

Representation

Metadata:

Content-type: text/html

Data:

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD  
HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
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<title>Le site officiel de la Tour Eiffel</title>
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represents

(stands for)



describes
(designates)

Resource:
Eiffel Tower
Metadata

(stands for)



02 How to Name Things? - URIs Pt.2

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Lecture 2: Semantic Web Technologies Part I