

Simple Knowledge Organisation Systems (SKOS) Something Kool, Original and Sexy

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Virtual Talk at the Metadata Research Centre,
University of North Carolina at Chapel Hill,
October 2006

Part 0. Preface

- Currently SKOS at W3C Working Draft
- SKOS to W3C Recommendation in 20 months
 - Semantic Web Deployment WG
 - Tom Baker (DCMI) & Guus Schreiber co-chair
- Nothing is set in stone!

Part 1. Informal Introduction

SKOS ...

- **S**imple
 - **K**nowledge
 - **O**rganisation
 - **S**ystems
- (official)

SKOS ...

- **S**omething
 - **K**ool,
 - **O**riginal &
 - **S**exy
- (ironic)

Old Hat

- SKOS is **nothing new** ...
 - ... distill traditional wisdom ...
 - ... library & information science ...
 - ... thesauri, classification schemes, subject heading systems, taxonomies ...
 - ... information services.

New Hat

- Leverage traditional wisdom in **distributed, decentralised metadata**.
- I.e. Multiple providers and multiple consumers of metadata ...
- ... where metadata from different providers overlaps in some way ...
 - e.g. Metadata from different providers describing the same resources, or ...
 - e.g. Metadata from different providers uses same or linked controlled vocabularies.

SKOS ...

- **S**omehow
- **K**now
- **O**ther
- **S**tuff

(Jakob Voss)

Functionality

- E.g. SWED (Semantic Web Environmental Directory)
 - swed.org.uk
 - Search & Browse (“faceted”)



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Organisations and projects are categorised using six characteristics or facets which are shown below. The numbers in the brackets show how many results are in that facet. To start browsing pick an option from one of the facets. Click **+** to see full lists of options for each facet.

+ **Topic of interest** [\[What is this facet?\]](#)

[Animal Welfare](#) (11) | [Archaeology](#) (2) | [Arts and Crafts](#) (8) | [Biodiversity](#) (1) | [Built Environment](#) (15) | [Business and Commerce](#) (8) | [Climate and Meteorology](#) (8) **More options**

+ **Organisation type** [\[What is this facet?\]](#)

[Advisory](#) (3) | [Campaign](#) (1) | [Commercial](#) (4) | [Development \(World\)](#) (1) | [Educational](#) (6) | [International](#) (1) | [Membership Organisation](#) (1) **More options**

+ **Activity** [\[What is this facet?\]](#)

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☐ **Project type** [\[What is this facet?\]](#)

[Conservation Project \(Heritage\)](#) (1) | [Conservation Project \(Wildlife\)](#) (1) | [Educational Project](#) (1)

☐ **Operational area** [\[What is this facet?\]](#)

[International Areas](#) (2) | [Non UK Counties](#) (2) | [United Kingdom](#) (75) | [Worldwide](#) (22)

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[A*](#) (5) | [B*](#) (9) | [C*](#) (13) | [D*](#) (2) | [E*](#) (4) | [F*](#) (7) | [G*](#) (3) **More options**



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Topic of interest

... > Animal Welfare

[\[X\]](#)

[Captive Animals](#)

[\(Welfare of\)\(1\)](#) | [Wild Animals](#)

[\(Welfare of\)\(1\)](#)

Organisation type

[Advisory](#)(1) | [Campaign](#)(1) | [Development](#)

[\(World\)](#)(1) | [Educational](#)(1) | [International](#)(1) | [Membership](#)

[Organisation](#)(1) | [Not For Profit](#)(10) | [Research](#)(1) | [Special Interest](#)(2) | [Wildlife Conservation](#)(1)

Current Search Results

These results show all organisations and projects matching the current set of selections. You can refine your search by selecting a facet from the boxes on the left.

Topic of interest > Animal Welfare [\[X\]](#)

[click [X](#) to remove filter(s)]

Results **1 to 10** of 11

Advocates for Animals (AFA)

The objects of Advocates for Animals are: the protection of animals from cruelty, the prevention of the infliction of suffering, and the abolition of vivisection. ...

Type of Organisation: Campaign

Barn Owl Trust

The aims of the Trust are to conserve the barn owl and its environment; to make available free information on barn owl conservation including habitat, ...

Type of Organisation: Registered Charity

Humane Slaughter Association (HSA)

The aim of the HSA is to improve conditions for animals and birds in abattoirs, markets and during transit. This is achieved by a rational, ...

Type of Organisation: Registered Charity

Institute of Biology (IOB)

The IOB is a chartered body which represents and promotes the status of professional biologists. It has members working in all branches of biology, in ...

Type of Organisation: Learned Society



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Topic of interest

... > Captive Animals (Welfare of) [\[X\]](#)

Organisation type

[Not For Profit\(1\)](#)

Activity

[Cultural Activities\(1\)](#) | [Education and Training\(1\)](#) | [Organisational Support\(1\)](#) | [Research and Development\(1\)](#) | [Service Provision\(1\)](#) | [Wildlife and Biodiversity Related\(1\)](#)

Project type

Operational area

Current Search Results

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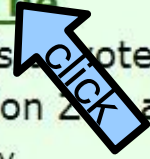
Topic of interest > [Animal Welfare](#) > Captive Animals (Welfare of) [\[X\]](#)
[click [X](#) to remove filter(s)]

Results **1 to 1** of 1

[Zoological Society of London, The](#)

The Zoological Society of London is devoted to furthering understanding of, and respect for, animals. It owns London Zoo and Whipsnade Wild Animal Park, which ...

Type of Organisation: Registered Charity





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- [Zoological Society of London, The](#)

Record 1 of 1 | [Back to Results](#) <<

Zoological Society of London, The

Type of Organisation: Registered Charity

URL:

The Zoological Society of London is devoted to furthering understanding of, and respect for, animals. It owns London Zoo and Whipsnade Wild Animal Park, which house the most comprehensive animal collections in the country. As a recognised centre of scientific expertise, the Society undertakes conservation, research and veterinary programmes around the world. The Society is comprised of some 4,000 Fellows, 20,000 Lifewatch members of London Zoo and 10,000 Friends of Whipsnade. Only the Fellows have a constitutional role to play through the annual elections of the Council and their eligibility to stand as candidates for Council.

The public face of the Society is London Zoo and Whipsnade Wild Animal Park. Yet much 'behind the scenes' work is undertaken through the Society's research arm, the Institute of Zoology. Veterinary care, behavioural enrichment and reproductive biology are just some of the conservation-orientated activities of the Society. It has a growing overseas Conservation & Consultancy Division with major projects in Saudi Arabia, Kenya, Niger and Indonesia.

The Society disseminates its research through a series of scientific meetings, publication of learned journals and a library containing 200,000 volumes - the largest privately owned zoological library in the world.

The Society has for its entire existence been at the forefront of research into breeding and reintroduction of endangered species. This work continues with ever more vigour.

Founded in: 1826

Contacts

Name: name withheld (Clerk to the Council) **Regent's Park**
fax: 0171-586 5743 **London**
tel: 0171-722 3333 **NW1 4RY**
England

Classifications

| | |
|-------------------|--|
| Topic of interest | Animal Species Animal Welfare Captive Animals (Welfare of) |
| Activity | Botanical and Zoological Gardens ^{SS} Conservation (Wildlife) ^{SS} Education and Training ^{SS} Events (Organisation) ^{SS} Research and Development ^{SS} swed at:species surveying ^{SS} |
| Operational area | United Kingdom ^{SS} Worldwide ^{SS} |

Links

Demonstration data Data on this page may be out of date. It is derived from an earlier publication: Who's Who in the Environment [1]. Blue text signifies that information is *not* from the primary source. Click on the ^{SS} icon near the text to find out about the source of the information.

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Topic of interest

... > Built Environment

[\[X\]](#)

Organisation type

... > Public Sector [\[X\]](#)

[Other Public Body\(2\)](#)

Activity

[Campaigning and Lobbying\(1\)](#) | [Education and Training\(1\)](#) | [Information Related\(1\)](#) | [Organisational Support\(1\)](#)

Project type

Operational area

[United Kingdom\(2\)](#)

Current Search Results

These results show all organisations and projects matching the current set of selections. You can refine your search by selecting a facet from the boxes on the left.

Topic of interest > Built Environment [\[X\]](#)

Organisation type > Public Sector [\[X\]](#)

[click [X](#) to remove filter(s)]

Results **1 to 2** of 2

[DOE \(NI\) - Environment and Heritage Service - Environmental Protection Directorate](#)

The Service contributes to the safeguarding of the environment by monitoring and managing the improvement of air and water quality, regulating emissions from industry, controlling ...

Type of Organisation: Non Departmental Public Body

[Northern Ireland Tourist Board](#) (NITB)

The Northern Ireland Tourist Board aims to develop and present Northern Ireland as a quality tourism destination within the international market, to promote domestic tourism ...

Type of Organisation: Non Departmental Public Body



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that topic. You can select topics in this way which are at any level of the tree. If you browse matching entries for a category that has no matches that you will be taken back to the start page for browsing.

[-] International Areas

[+] NATO

[+] Global Oceans

[+] European Union

[-] Non UK Counties

[+] North America

[+] Asia

[+] South America

[+] Africa

[+] Oceania

[+] Europe

[-] United Kingdom

[+] Wales

[+] England

[+] National Park Areas

[+] Scotland

[+] UK Dependencies

[+] Northern Ireland

[+] Worldwide

United Kingdom

United Kingdom (UK) means includes England, Northern Ireland, Scotland, Wales and all UK dependancies.

[Browse matching entries](#)



SWED

... harvests metadata ...

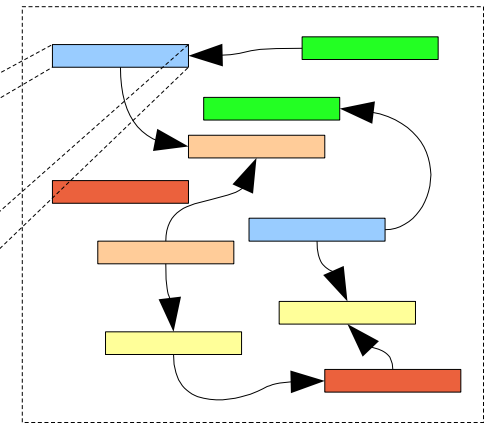
... find information (faceted browse) ...

... shared vocabularies (taxonomies), published using SKOS.

What is SKOS For?

... the Metadata Perspective ...

| | |
|----------------|--|
| ID | |
| Title | |
| Creator | |
| Subject | |
| | |
| | |
| | |



"value space"

... the Metadata Perspective ...

- Where metadata “values” are drawn from a **controlled “value space”** ...

... and the “value space” has a **simple structure**

...

... and you want to use the structure to **power search & browse** ...

... **use SKOS** to describe the “value space”.

Tech Reading ...

- SKOS Core Tutorial from DC 2005 ...
 - Linked from www.w3.org/2004/02/skos/core/
- SKOS Core Guide ...
 - www.w3.org/TR/swbp-skos-core-guide

Part 2. Direction

Requirements

- **What is SKOS for?**
- I.e. What problem(s) is SKOS supposed to solve?
- **How can we state the requirements?**
- I.e. How do we know when SKOS is good enough?

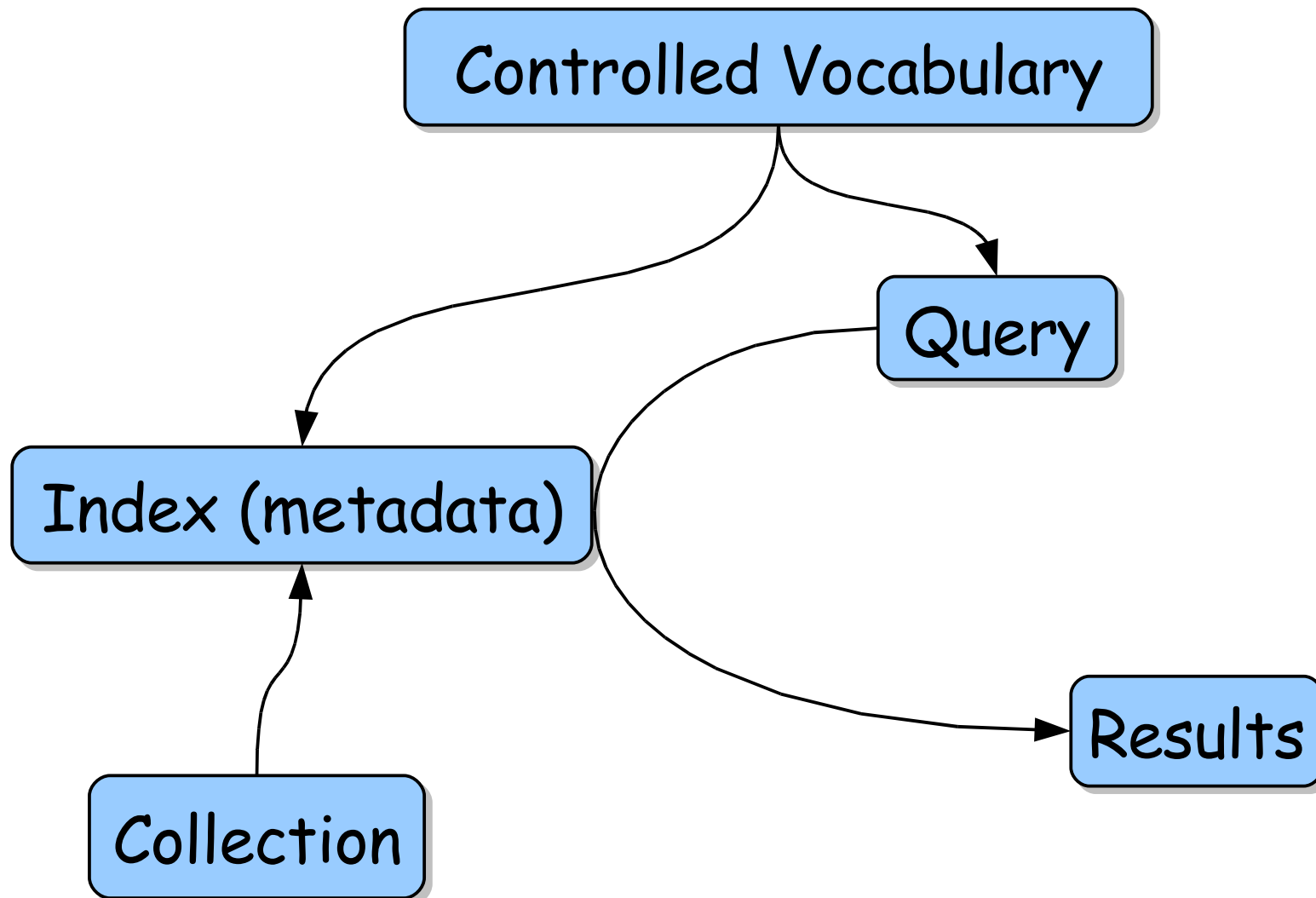
Statement of Purpose

- Enable the use of controlled structured vocabularies for retrieval ...
- ... in decentralized information systems ...
- ... by providing an extensible language for sharing data between software systems.

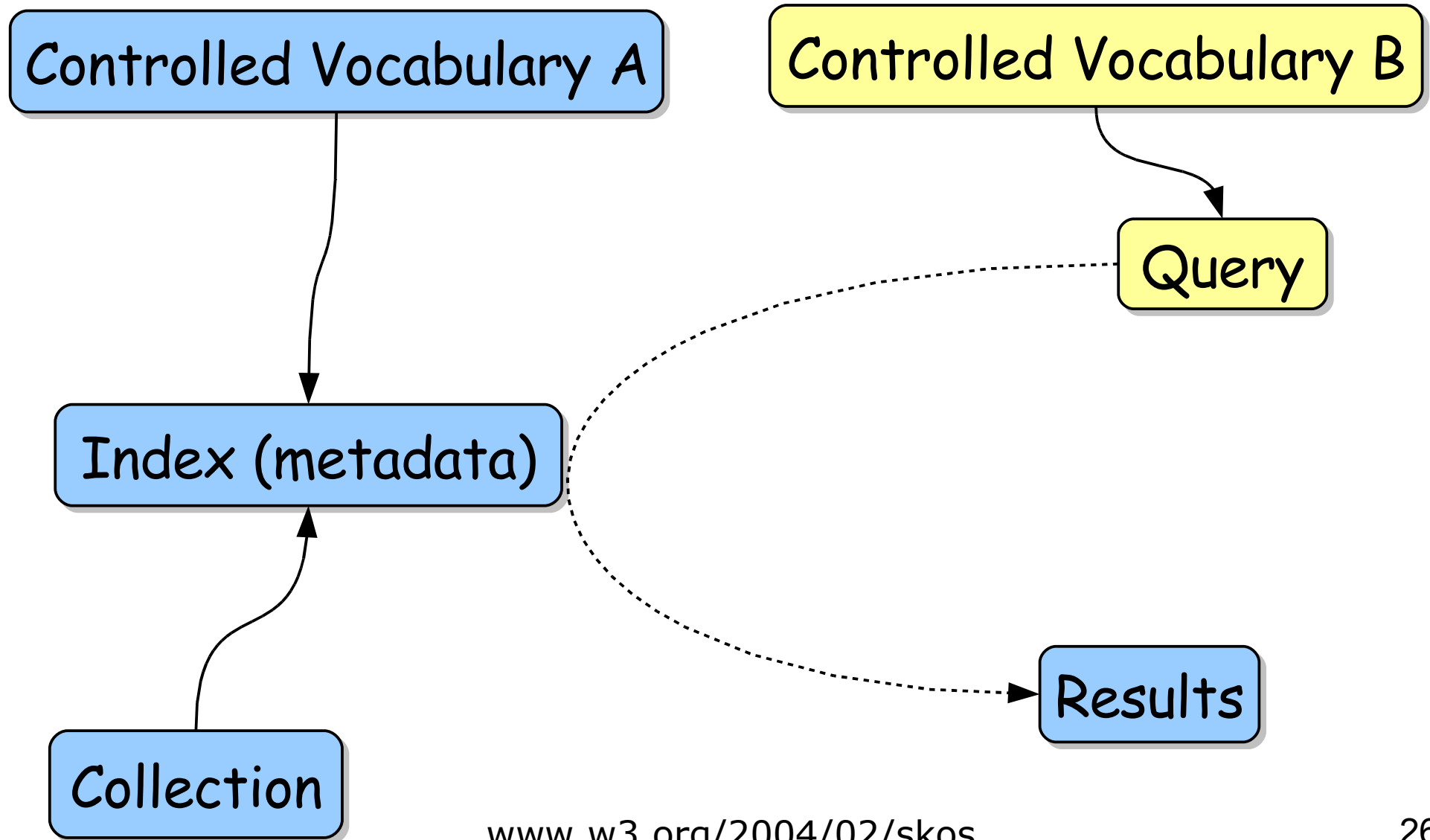
Scenarios

- Two general patterns ...
 - A) A controlled vocabulary is used to “index” and to “retrieve” some objects,
 - B) Different controlled vocabularies are used to “index” and to “retrieve” some objects.

Scenario (Pattern A)



Scenario (Pattern B)



Use Cases

- Begin requirements analysis by describing **use cases**.
- **All use cases follow either pattern A or B.**
- If use cases are **satisfiable** then SKOS is “**good enough**”.
- N.B. Could still be used for other purposes, but **not a requirement**.

Part 3. Assumptions

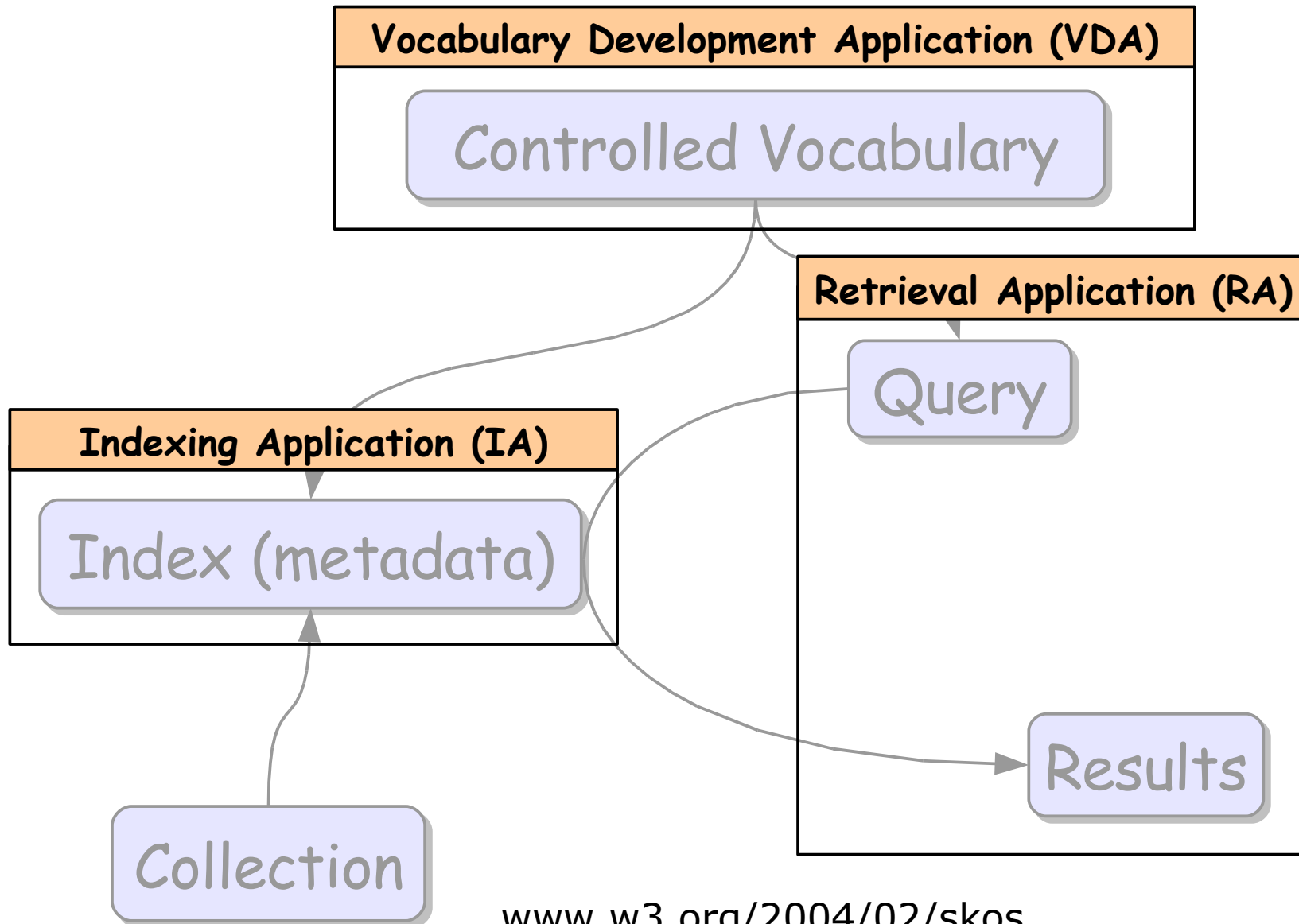
Statement of Purpose

- Enable the use of controlled structured vocabularies for retrieval ...
 - ... in decentralized information systems ...
 - ... by providing an extensible language for sharing data between software systems.
-
- **Which data?**
 - **Which software systems?**

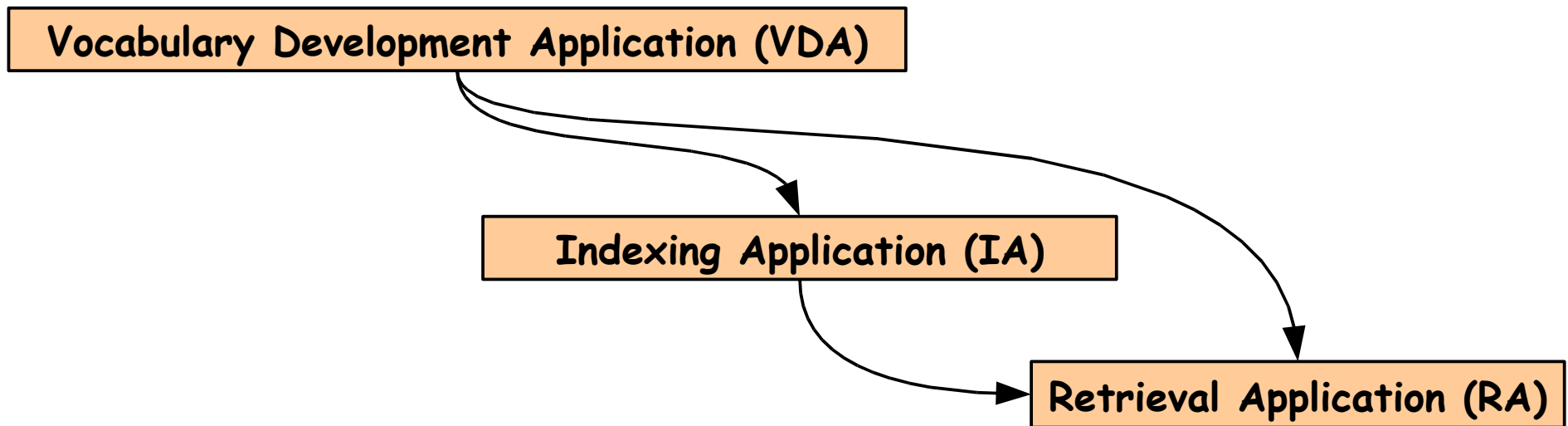
Software & Data

- What generic software components are we intending to support?
- What functionalities do they provide?
- What data do they require?
- How are the data shared?

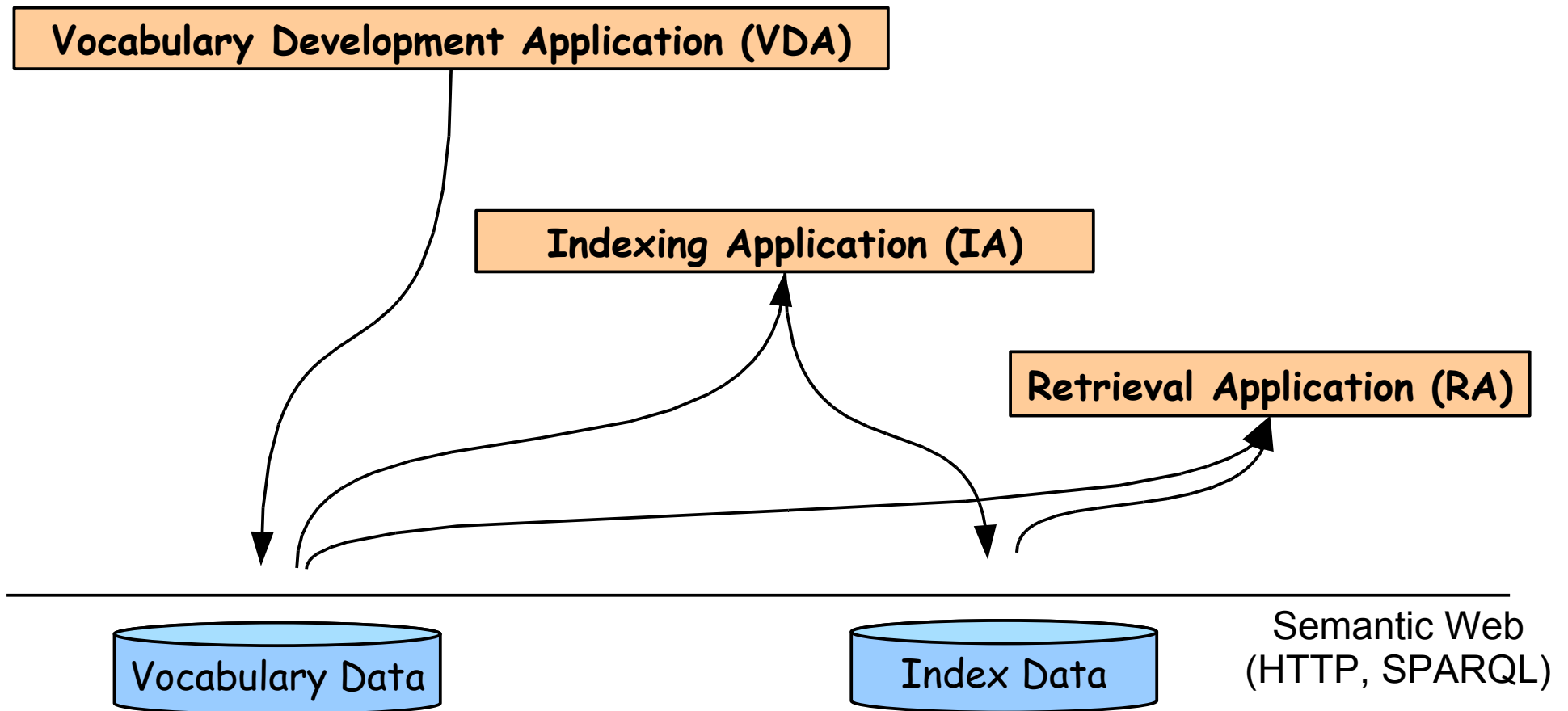
Pattern A – Software Components



Pattern A – Data Flow

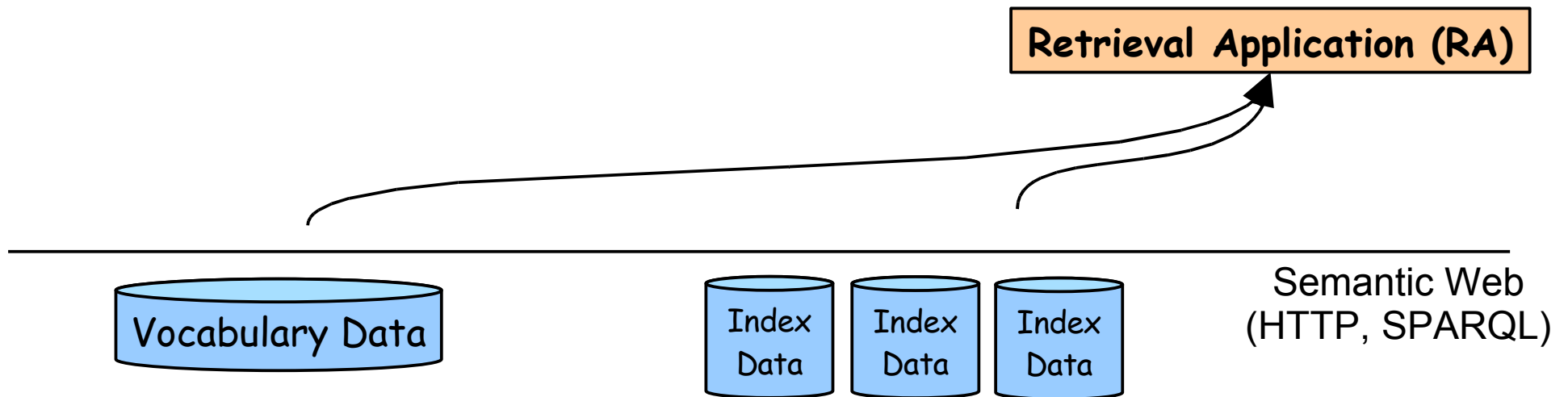


Pattern A – Interaction



Pattern A – Interaction ... Why?

- Merge data from multiple sources.



Summary (Direction & Assumptions)

- SKOS to support retrieval using controlled vocabularies
- Two general scenarios (A & B)
- Use cases
- Software architecture ...
 - Functionality,
 - Interaction.

See also ...

- **“SKOS: Requirements for Standardization”**
paper and presentation from DC-2006
- **“Theory of Retrieval Using Structured Vocabularies”**
 - **purl.org/net/retrieval**

Part 4. Trends & Constraints

(Gazing into the crystal ball ...)

Cost!!!

- Vocabularies cost money!
- Indexing (making metadata) costs money!
- Mapping between vocabularies costs money!

Competition

- Text retrieval.
- Wisdom of crowds ...
 - Pagerank,
 - Search behaviour,
 - Social tagging.

Bottom Line

- Pressure on solutions based on controlled vocabularies to **cut costs** and **max perform**.
- Pressure creates trends in use of controlled vocabularies ...
 - Integrated solutions,
 - Interoperability,
 - Collaboration,
 - Maintenance.

Implications for Mapping

- Simplest mapping that achieves required retrieval performance ... ?
- Role for mapping in describing change ... self-updating indexes!

Final Word

- Semantic Web Deployment WG has started ...
- ... make your voice heard!
- Formal participation, contact your W3C A/C rep.
- Informal participation, subscribe to public-esw-thes@w3.org