Hierarchies & Polyhierarchies
Is More Better?

Heather Hedden

Senior Taxonomy Analyst

About Project Performance Corporation

PROJECT performance CORPORATION
Part of the AEA group

Energy/Environment
Green strategies for government and industry:
- Air quality and climate change
- Greenhouse gas reduction
- Carbon management
- Environmental risk mitigation
- Environmental impacts of transport
- Information and data management

1,200-person multi-disciplinary team of scientific & technical experts
- Scientific subject matter experts
- Systems engineers and architects
- Policy and regulatory specialists
- Project management professionals
- Certified Information technology experts
- Security professionals

Information Management
- Program and Project Management
  - Earned Value Management
  - Performance Measurement
- Program Assurance and Evaluation
- Business Process Improvement
- Security Policy and Compliance
- Communications/Outreach and Facilitation

Infrastructure
- Systems Engineering and Technical Assistance (SETA)
- Capability Maturity Model Integration (CMMI)
- Earned Value Management
- Configuration Management
- Technical and Advisory Support
- Independent Verification & Validation (IV&V)

Enterprise Solutions
- Master Data Management and Data Governance
- Business Intelligence
- Adaptive Data Warehousing
- Enterprise Architecture
- Infrastructure Systems Engineering
- Knowledge Management
- Portal Solutions
- Enterprise Content Management
- IT Optimization/Virtualization

KNOWLEDGE MANAGEMENT
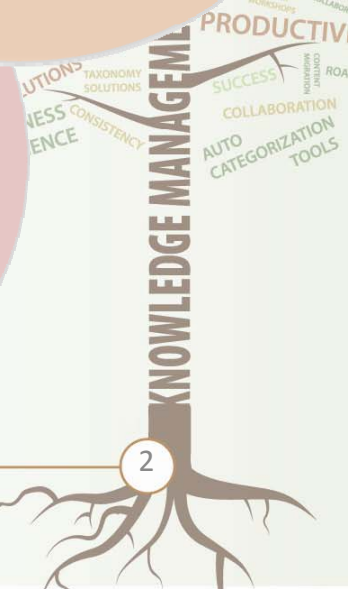
About Heather Hedden

- Taxonomy Consultant, Project Performance Corporation

- Continuing Education Instructor, "Taxonomies & Controlled Vocabularies," Simmons College Graduate School of Library & Information Science

- Author, *The Accidental Taxonomist* (Information Today Inc., 2010, (www.accidental-taxonomist.com)

- Previously taxonomist with First Wind, Viziant Corporation, Hedden Information Management, and Information Access Company/ Thomson Gale (now Cengage Learning)
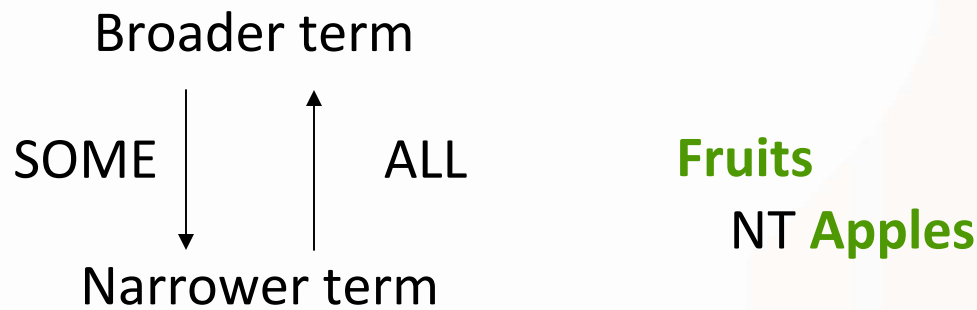
Agenda

1. Review of Hierarchical Relationships
2. Review of Polyhierarchies
3. Polyhierarchies – Pluses
4. Polyhierarchies – Minuses
5. Polyhierarchy Recommendations

Hierarchical Relationships:
Asymmetrical reciprocal relationships

Broader term

SOME   ALL

Narrower term

Fruits
    NT **Apples**

Three types:
1. Generic - Specific
2. Common noun - Proper noun (instance)
3. Whole – Part

Hierarchical Relationships

1. Generic - Specific:

Category or class
– members
– more specific types

Examples:

Plants
   NT **Trees**

Financial services
   NT **Investment services**

Romance languages
   NT **Italian**

Narrower term "is a"/ "are a kind of" broader term

Hierarchical Relationships

2. Instance:

Common noun
– Proper noun

Examples:

National parks
 NT **Grand Canyon**

Children's writers
 NT **Rowling, J.K.**

Holidays
 NT **Thanksgiving**

Narrower term "is an example of" broader term

3. Whole - Part:

Concept or Entity
– *integral* part
– subentity

Examples:

U.S. Congress
     NT **U.S. Senate**

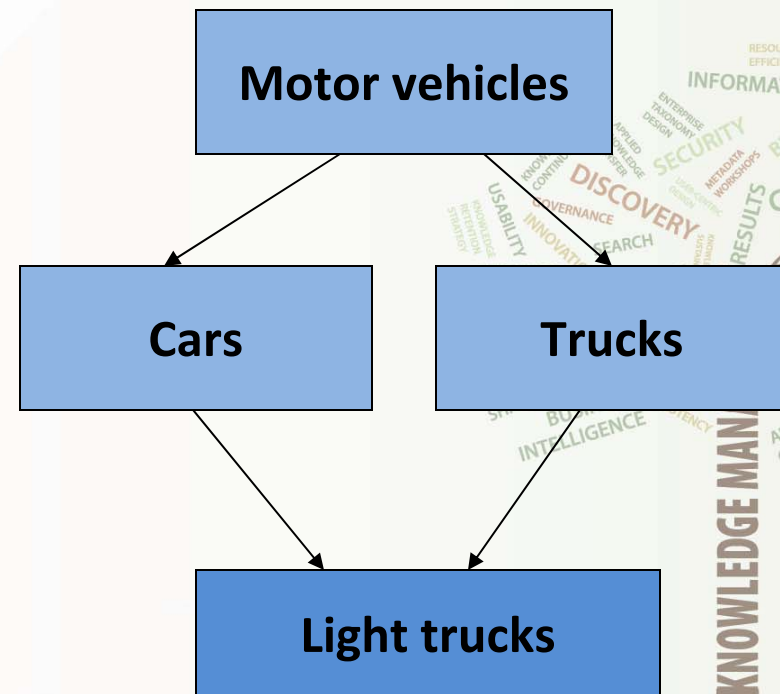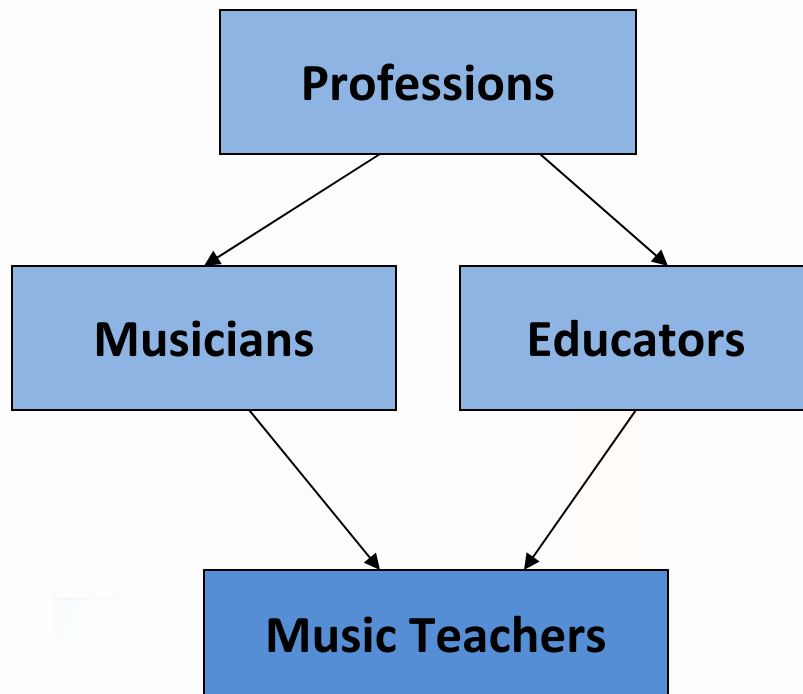**Colorado**
     NT **Denver**

Digestive system
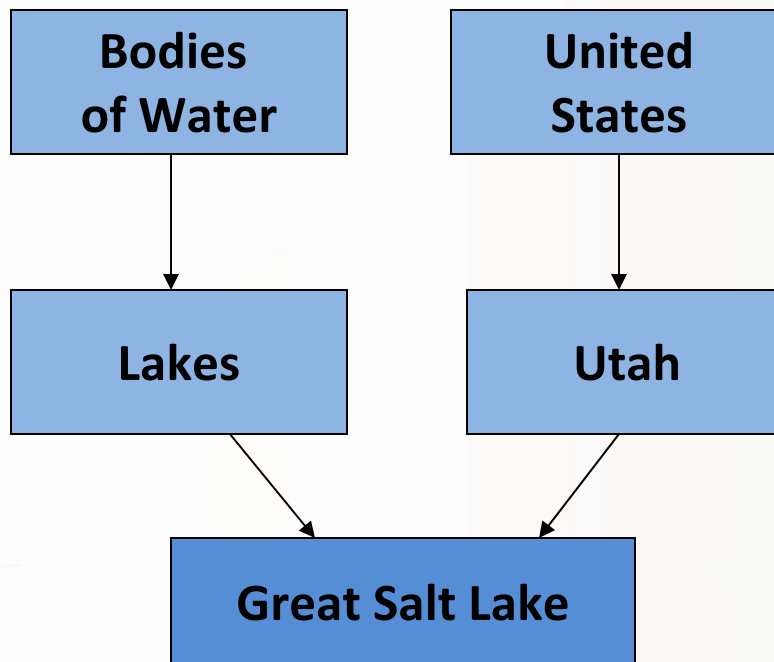   NT **Stomach**

Narrower term "is in" broader term

Polyhierarchies

- Based on generic relationship

Polyhierarchies

- Based on different kinds of hierarchical relationships, different means of categorizing

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  ┌─────────────┐      ┌─────────────┐
  │   Bodies    │      │   United    │
  │  of Water   │      │   States    │
  └──────┬──────┘      └──────┬──────┘
         │                    │
         ▼                    ▼
  ┌─────────────┐      ┌─────────────┐
  │    Lakes    │      │    Utah     │
  └──────┬──────┘      └──────┬──────┘
          \                  /
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            ▼              ▼
        ┌───────────────────────┐
        │    Great Salt Lake    │
        └───────────────────────┘
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Polyhierarchy - Pluses

Polyhierarchy is useful when...

- It is obviously logical for select terms (cross-overs/hybrids, e.g. Music teachers or Light Trucks)
- It is indicated by different stakeholder views
- Indexers/taggers browse the taxonomy hierarchically
- End-user testing/input (e.g. card-sorting) indicates users are split as to where in the hierarchy a term belongs

Polyhierarchy - Pluses

**Retail website
case study example:**

Health & Fitness
>   › Portable Fitness Electronics
>   › Fitness GPS Watches

Car, Marine & GPS
>   › GPS Navigation
>   › Handheld GPS
>   › Fitness GPS Watches

**Sports taxonomy
case study example:**

Back Exercises
> › Dead Lifts

Hamstring Exercises
> › Dead Lifts

Polyhierarchy - Minuses

Polyhierarchy is *not* so good when…

- It violates hierarchical relationship standards

- It becomes excessive, perhaps more common than mono-hierarchies

- It is the result of different kinds of a categorization, and the presence of different kinds of categorization is confusing

- It is a small taxonomy and the user doesn't need or expect polyhierarchy

Polyhierarchy - Minuses

Violating hierarchical relationship standards:
  Illogical parent-child relationships could result.
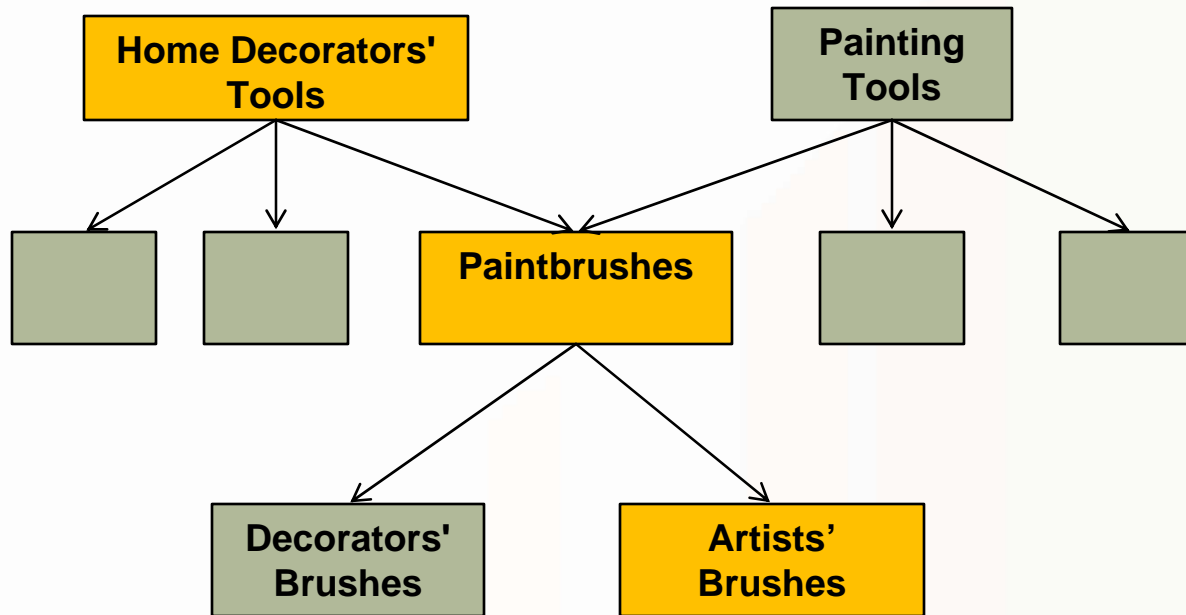
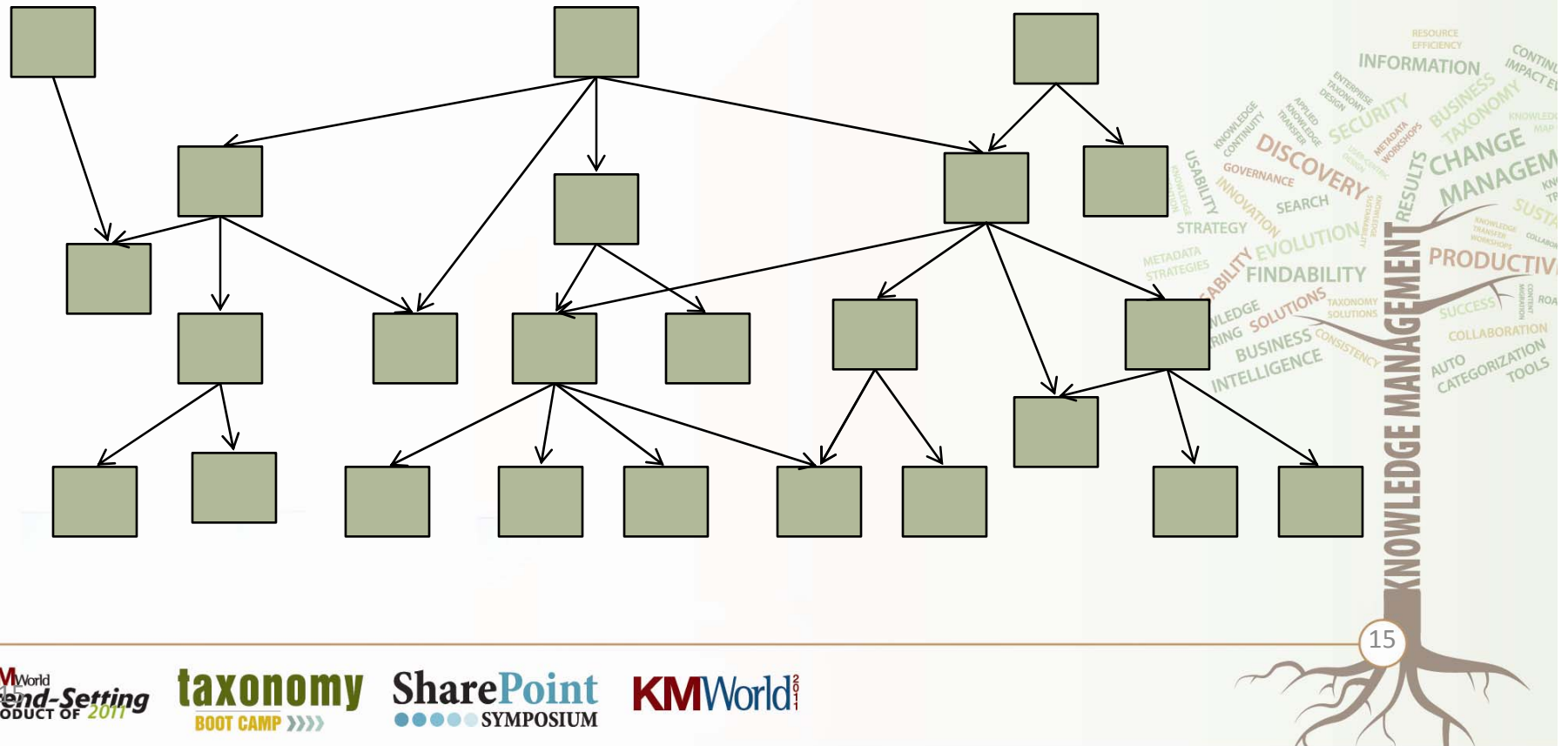*Paintbrushes does not belong under a hierarchy of Home Decorators' Tools.*

Problems with excessive polyhierarchies:

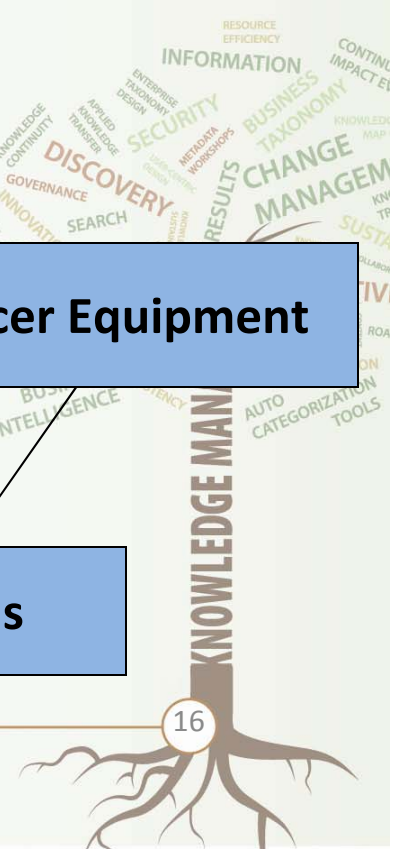- Familiar tree structure is lost. Users cannot see the logical hierarchy.

- Users spend too much time clicking through categories.

Polyhierarchy - Minuses

Logical polyhierarchies, if done consistently, could become extensive.

Example: creating polyhierarchies for products based on different classifications

| Glass Products | Tableware | | Balls | Soccer Equipment |

| Wine Glasses | | Soccer Balls |

Polyhierarchy - Minuses

Multiple, potentially confusing categorizations:

- Place names in hierarchies for both geographic location and for place type

- Products in hierarchies for both material and for use

- Exercises in hierarchies for both body part and purpose/type (strength, endurance, etc.)

➢ "It's OK, we can have polyhierarchies"
    This is not always the best solution.

➢ Maybe facets should be used instead.

Polyhierarchy Recommendations

Violating hierarchical relationship standards

- Might be OK in some cases in some taxonomies
- But avoid overuse in polyhierarchies

Case study example:

- *Accessories* as a narrower term to a product category
- *Services* as a narrower term to a product category

Computers & Tablets
Laptop & Netbook Computers
Tablets, iPads & E-Readers
Desktop & All-in-One Computers
Monitors
Mice & Keyboards
Printers
Hard Drives & Storage
Computer Memory
Video Cards & PC Components
Networking & Wireless
Software
Computer Accessories
Computer Setup & Services
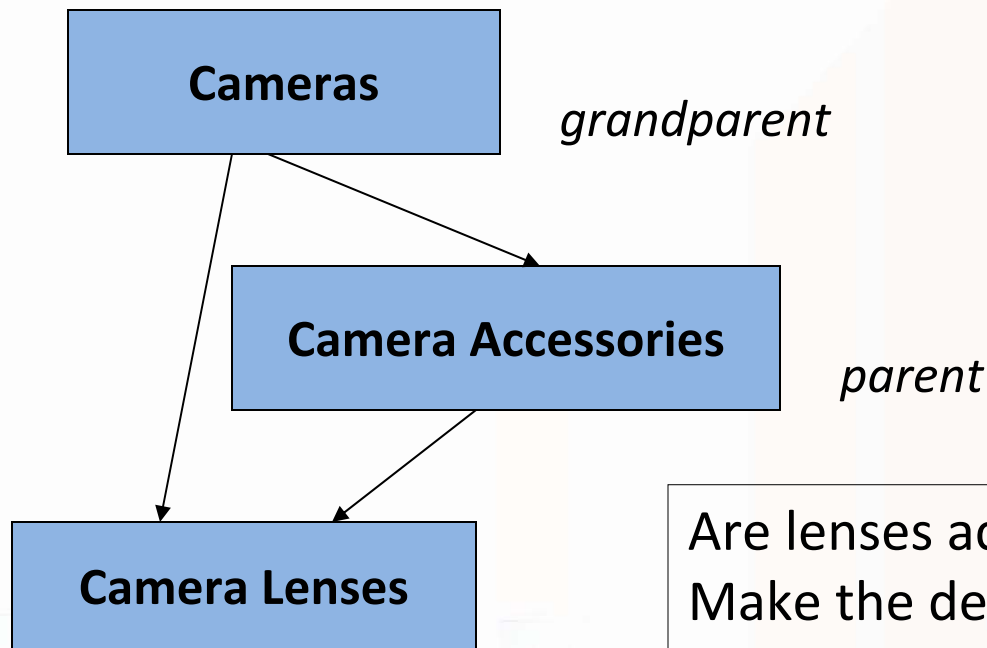
Polyhierarchy Recommendations

Violating hierarchical relationship standards within limits

Computers & Tablets

    Laptop & Netbook Computers

        PC Laptops

        MacBooks

        Chromebooks

        Netbooks

            All Netbooks

            Netbook Cases

            Computer Setup & Services   *Not OK*

        Laptop Accessories

        Computer Setup & Services   *OK*

    Desktop & All-in-One Computers

        All-in-One Computers

        Towers Only

        Desktop Packages

        Computer Setup & Services

                                    OK

Do not create a polyhierarchy to both a "parent" and a "grandparent."

Cameras — *grandparent*

Camera Accessories — *parent*

Camera Lenses

Are lenses accessories or not? Make the decision one way or other, not both.

Polyhierarchy Recommendations

Might be better *not* to have polyhierarchies when the taxonomy is small and the number of top-level categories are few

Case study: Client management documents of a financial services company has 114 topical terms categorized with just five broader terms:

- Account Information
- Client Information
- Client Status
- Disclosures & Notifications
- Approvals/Guidance

Decided against polyhierarchies.

Reason: Repeat users can memorize the small hierarchy. They don't expect polyhierarchy here.

Polyhierarchy Conclusions

Some is good. More isn't necessarily better.

- Polyhierarchies are best for isolated terms that can fall into two categories.

- Polyhierarchies can become too many in cases of overlays of two different categorization methods for numerous terms. (Facets may be better.)

- Polyhierarchies are useful, no matter how extensive, in term-focused thesauri

- Polyhierarchies should be more limited in hierarchically displayed taxonomies

Questions

Heather Hedden
Senior Taxonomy Analyst
Project Performance Corporation
Heather.Hedden@ppc.com
703-462-3746
Corporate office: McLean, VA