

A Framework for the Unified Presentation of Environmental Risk Information

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Overview

- Introduction
- Areas of concern
- Examples
- Proposed solution
- Conclusions

Introduction

- Kyoto Accord means more individual responsibility for environmental impacts
- Subtle risks, small behaviours can have large cumulative effect
- Difficult to assess impacts of choices, information may be :
 - incomplete
 - confusing
 - not integrated
 - not trustworthy

Introduction

- Consumers may not be aware that a major source of household GHG emissions is food (preparation, conservation, transportation, production)
- Competing goals may include:
 - save money: maximize value (different definitions possible)
 - save water: xeriscape
 - buy local: David Suzuki's Nature Challenge
 - buy organic: what does this mean?

Introduction

- How do we set priorities, encourage others to adopt priorities?
- What are the best products available locally?
- Provide a clearinghouse for information, allow each person to make own decisions.
- Provide context - restore confidence.

Introduction

- Decide to decide
- Raise awareness to avoid ignoring, discounting subtle risks
- Connect risks to daily lives:
 - Easy access to useful information
 - Understandable units

Areas of Concern

- How will information be collected and synthesized from data?
- How will individuals interact with and gain access to information?
- How will that information be presented?

Areas of Concern: Data

- Four kinds of weakness of ecological dimension of sustainability (Dovers, Norton and Hanmer):
 - Incompleteness of knowledge
 - Complexity of systems
 - Rapidity of change of ecological systems
 - Need for extensive communication

Example 1: CO2 Calculator

- Natural Resources Canada website:
http://oee.nrcan.gc.ca/idling/calculator/CO2_calculator.cfm
- Units in gynasiums filled, or tonnes of CO2
- Savings expressed on a community level
- Are individuals empowered?

Example 1: Questions

CO₂ Calculator

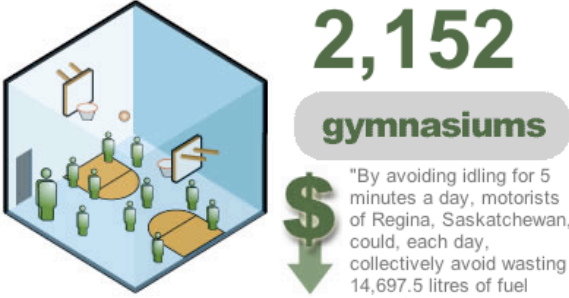
Your results

STEP 4 DID YOU KNOW that if every driver of a light-duty vehicle in **Regina, Saskatchewan**, avoided idling for **5 minutes** a day, the city could prevent **34.69 tonne(s)** of carbon dioxide from entering the atmosphere each day?

That's **12,660.43 tonne(s)** per year!

That is enough carbon dioxide to fill:

2,152
gymnasiums



"By avoiding idling for 5 minutes a day, motorists of Regina, Saskatchewan, could, each day, collectively avoid wasting 14,697.5 litres of fuel worth \$12,184.23. On an annual basis, this translates into savings of 5,364,587.5 litres worth \$4,447,243.04."

[← Back](#)

- What is a light-duty vehicle?
- How many drivers are in Regina, SK?
- How big are the gymnasiums? How would they be filled (and why)?

Example 1: Questions

- How much time is spent idling, in traffic and various other activities: drive-throughs, etc.?
- What is fuel consumption while idling?
 - type of vehicle
 - tuning of engine
- How many trees would I have to plant to balance out my emissions?

Example 1: Comments

- Generalizations are relatively easy to develop, but may lack power
- Specificity makes concepts concrete, requires complex models
- Articulation of context requires local information

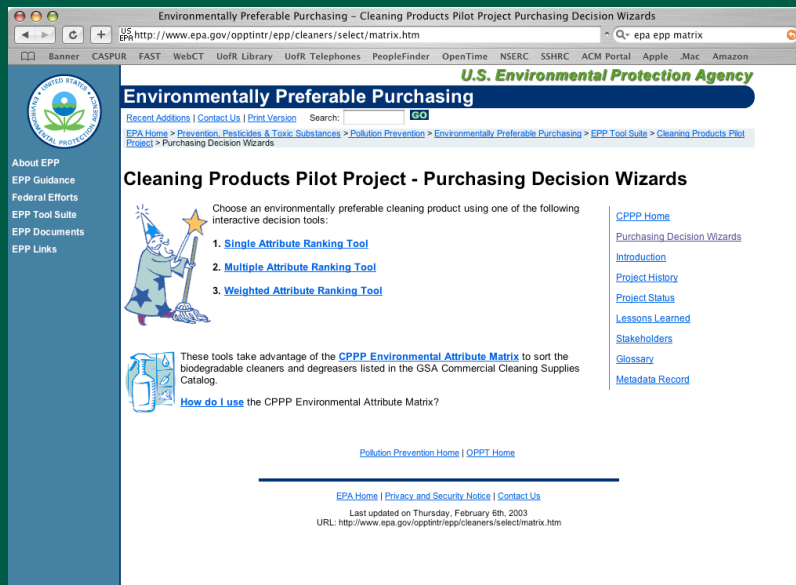
Example 2: Cleaning Products

- US EPA Environmentally Preferable Purchasing program established purchasing decision wizards
- Relate products on 8 attributes: skin irritation, food chain exposure, air pollution potential, contains fragrance, contains dyes, product is a concentrate (reduced packaging), packaging contains recycled paper, product minimizes exposure to concentrate

Example 2: Cleaning Products

- Much information available on the net
- EPA EPP tools most accessible to consumers
- Relationship between human and computer: manual, automatic, augmented

Example 2: Options



- Sort by a single attribute - no filtering
- OR
- Use multiple attributes
- OR
- Assign weights in scoring formula
- Which version to use?

Example 2: Multiple Attribute

Environmentally Preferable Purchasing – Cleaning Products Pilot Project – Multiple Attribute Ranking Tool

U.S. Environmental Protection Agency

Environmentally Preferable Purchasing

Recent Additions | Contact Us | Print Version Search: GO

EPA Home > Prevention, Pesticides & Toxic Substances > Pollution Prevention > Environmentally Preferable Purchasing > EPP Tool Suite > Cleaning Products Pilot Project > Multiple Attribute Ranking Tool

Cleaning Products Pilot Project - Multiple Attribute Ranking Tool

2. Multiple Attribute Ranking Tool

This tool lets you sort the biodegradable cleaning and degreasing products by up to four [environmental attributes](#). In addition, you can set values that will act as the minimum acceptable levels for these attributes. These levels are filters. Products that do not meet these levels will not be displayed in the output table.

[Back to Purchasing Decision Wizards](#)

Step 1: Select those [environmental attributes](#) that are most important to you. You can select up to four attributes.

Sorting Priority	Environmental Attribute
First	<input type="text"/>
Second	<input type="text"/>
Third	<input type="text"/>
Fourth	<input type="text"/>

Step 2: For the [environmental attributes](#) selected in Step 1, select the minimum acceptable levels. Products that do not meet these criteria will not be included in the output table.

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[Project Status](#)
[Lessons Learned](#)
[Stakeholders](#)
[Glossary](#)
[Metadata Record](#)

Example 2: Weighted Attribute

Environmentally Preferable Purchasing – Cleaning Products Pilot Project – Weighted Attribute Ranking Tool

http://www.epa.gov/opptintr/epp/cleaners/select/tool3/tool3frm.htm

Banner CASPUR FAST WebCT UofR Library UofR Telephones PeopleFinder OpenTime NSERC SSHRC ACM Portal Apple .Mac Amazon

Step 1: Select the minimum acceptable level for one of the [environmental attributes](#).

Step 2: For the same attribute, specify a value between 0 and 1,000 that reflects its relative importance to you. The more important, the higher a value you should select. The value you enter is counted towards a product's total score, provided the product meets the attribute's acceptable level (set in Step 1). Products that do not meet this level will not receive a score for the particular attribute.

Step 3: Repeat Steps 1 and 2 for each environmental attribute.

Environmental Attribute	Acceptable Level (Default = most stringent)	Relative Importance (0 to 1,000)
Skin Irritation:	Negligible	0
Food Chain Exposure - BCF:	Minimal	0
Air Pollution Potential - % VOC:	0 %	0
Contains Fragrance:	No	0
Contains Dyes:	No	0
Product Is A Concentrate (Reduced Packaging):	Yes	0
Packaging Contains Recycled Paper:	Yes	0
Product Minimizes Exposure to Concentrate:	Yes	0

For help with determining acceptable values click on the attribute's name.
Use your browser's "Back" button to return to this page.

Step 4: Submit your request.

Submit Reset

Example 2: User study

- Each participant is assigned tasks (answers require 1, 2 or 3 attributes) to complete with each interface.
 - “Which products cause strong skin irritation?”
 - “Of the products that cause slight or less skin irritation, which contain fragrance?”
 - “Which product(s) have negligible-slight skin irritation, do not contain dye, and minimize exposure to concentrate?”
- 6 groups based on order of interface presentation: SMW, SWM, MSW, MWS, WSM, WMS.

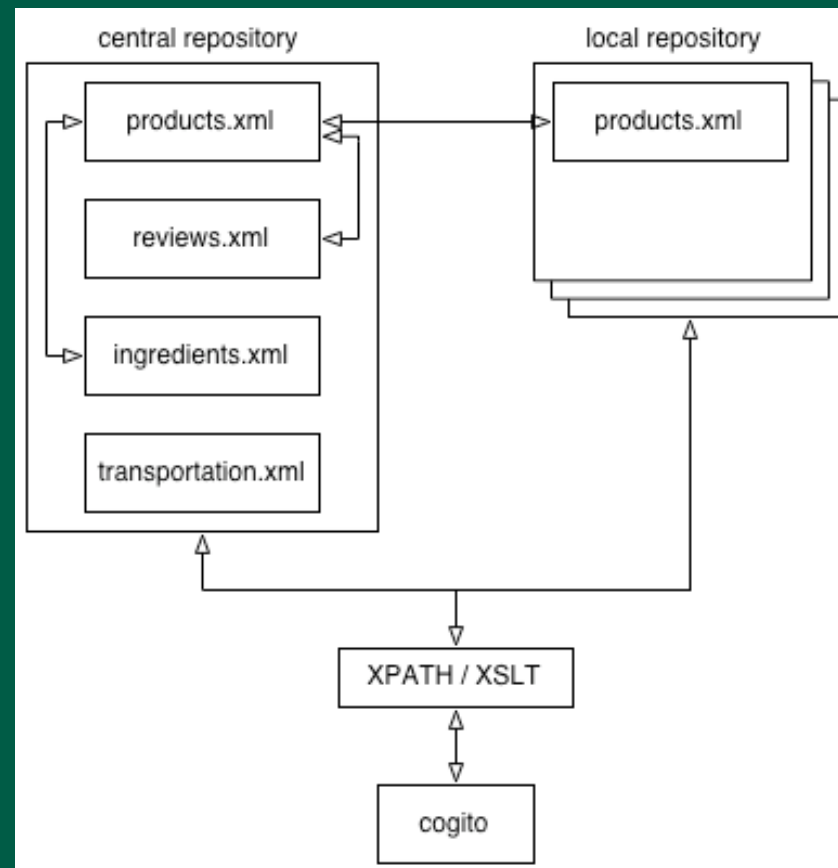
Example 2: Comments

- Usual problems with web applications
- Performance widely varied: is it hard to understand questions, use tools?
- Missing attributes: price, performance, manufacturer location...
- Would consumers choose these attributes over others, or use those names?
- Reading labels: how to decode them?

Proposed Solution

- How will information be collected and synthesized from data?
 - Use lifecycle approach
 - Allow for contribution of information from a range of sources under an open architecture
 - Allow comments and ratings of products and data sources
 - Value local information

Proposed Solution



Proposed Solution

The screenshot shows a web browser window titled "UPC Database" with the URL "http://www.upcdatabase.com/". The browser's address bar contains "upc database". The page features a navigation menu at the top with links: Banner, CASPUR, FAST, WebCT, UofR Library, UofR Telephones, PeopleFinder, OpenTime, NSERC, SSHRC, ACM Portal, Apple, .Mac, Amazon. The main content area is titled "Internet UPC Database" and includes a welcome message, a list of options, and several dated announcements from January 2004.

UPC Database

Options:

- [Look Up UPC](#)
- [Scan a Barcode](#)
- [Search](#)
- [Latest](#)
- [Downloads](#)
- [Statistics](#)
- [More Info!](#)

Advanced:

- [Look Up UPC without check digit](#)

Internet UPC Database

Welcome to the Internet UPC Database! One reason this site exists is for me to practice my own web development & database skills, experiment with new things, and to get a good laugh. I made it public so that others could make use of the information I've collected (whatever that use may be), submit data to my collection, and provide me with feedback.

Please, feel free to browse the database all you like. And even more importantly, **contribute!** Every new entry helps, and if you have access to more data than can easily be entered by hand (and you have permission to share it), contact me by email (webmaster@upcdatabase.com) and we can work out the details.

Click [here](#) if you don't see the menu frame on the left.

28 Jan 2004

Look! A downloads section! I'm now able to supply downloadable copies of the UPC Database (not the whole thing -- see caveats on downloads page) right here from this server. I plan to update this monthly. The SourceForge files are here, and a new snapshot from this morning. New snapshots will be made available on the first of every month. Please make use of the incrementals when possible, for everyone's sake.

For those of you who are still looking for something that doesn't require periodic downloads, but works better than HTML screen-scraping, I have something coming very soon.

(Very late on) 9 Jan 2004

Manufacturer data is here now, so that brings us pretty much up to where we were in terms of features. Performance should already be much better. I'll soon be able to start work on the new features... But now, to bed...

(Later on) 9 Jan 2004

If you're seeing this, then you're seeing the new box. The manufacturer data hasn't been copied over yet, but the entire item data is here. Let me know if you have any trouble.

Yes, the FAQ is gone -- I was very unhappy with the software that I was using. I'll have to build another one from scratch... A lot of the (most common) answers will be changing soon anyway...

Proposed Solution

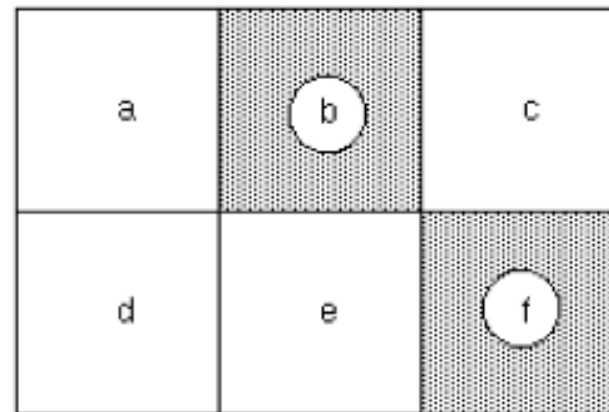
- How will individuals interact with and gain access to information?
 - Parameterize information space, each attribute may have several values
 - Allow user to systematically explore differences between different attribute values
 - Tools to navigate information space

Proposed Solution

{available alternatives configured}

A	a
B	b
C	c
D	d
E	e
F	f

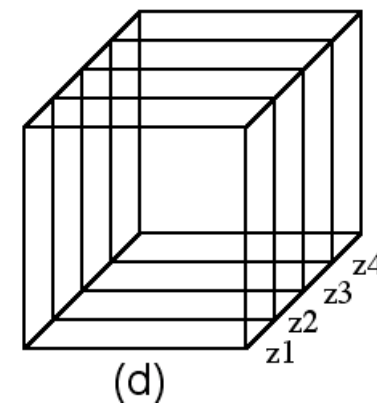
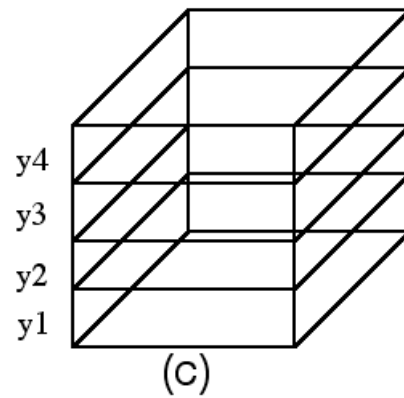
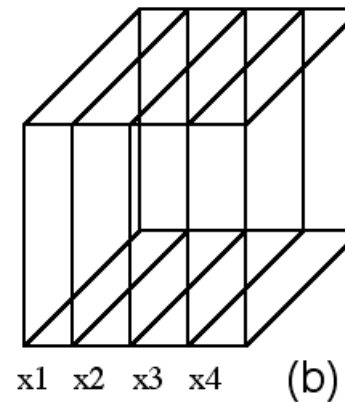
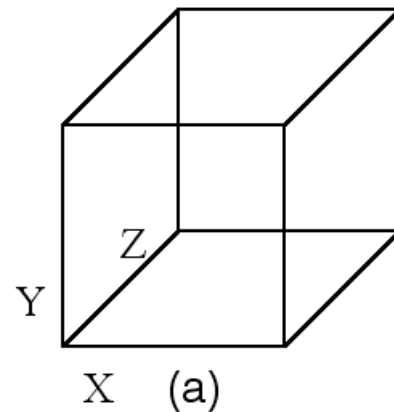
{representative images presented to user}



$b \times f \in \mathbf{B} \cup \mathbf{F}$

{user selection determines subspace for next iteration}

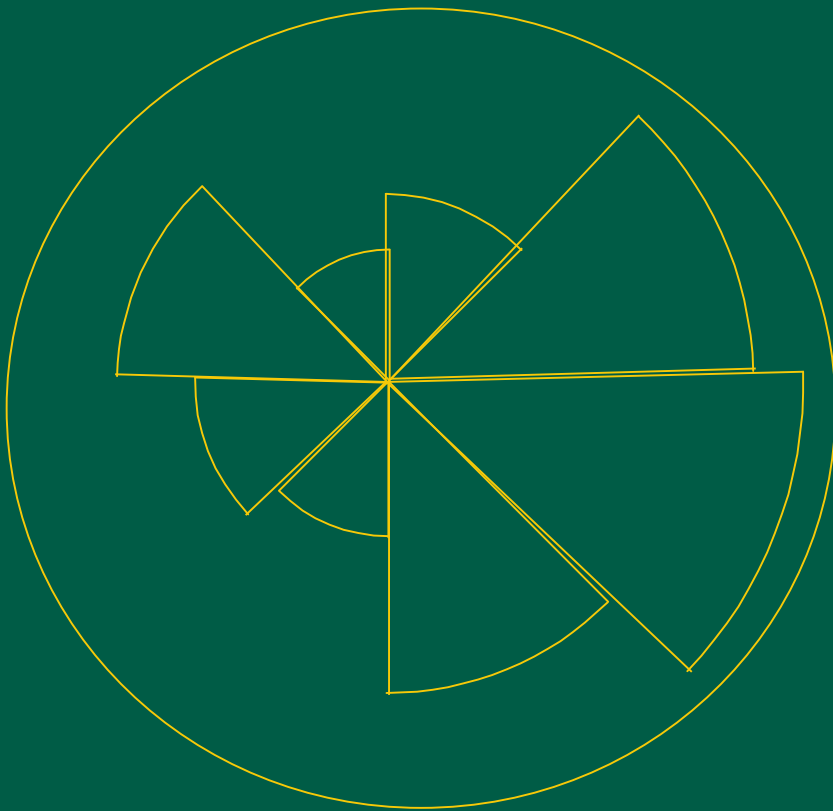
Proposed Solution



Proposed Solution

- How will that information be presented?
 - Common basis for comparison
 - Attribute values at a glance

Proposed Solution



- Nightingale Rose: angles constant, radius varies with data.
- Indicate score relative to other attributes values and to maximum

Application

- Ross Eco-Industrial park in Regina, Saskatchewan
 - Exchange information between consumers and producers of goods (manufactured or waste by-products).
 - Can link to and augment existing material descriptions
 - Maintain local context, but access global alternatives

Conclusions and Opportunities

- Approach has shown promise in other areas
- Better information about consumers and how they make decisions will be essential (personal constructs, conjoint analysis)
- Collection of interactions with system can provide data to inform policy decisions

Acknowledgements

- Funding provided by Centre for Sustainable Communities at the University of Regina and the Natural Sciences and Engineering Research Council of Canada
- Roger Petry has been an invaluable source of encouragement and ideas throughout this project