

Measuring Information Architecture Quality: Prove It (or Not)!

April 4, 2001 / 11:30am-1pm
CHI 2001 / Seattle, Washington
Keith Instone, Lou Rosenfeld
(organizers)

What is Information Architecture?

The *thing*

- Components for searching and navigating an information system

The *practice*

- Balances needs and characteristics of users, content and context

The *field*

- Applied field; draws on tools, and techniques of many other fields

Context

Why do we care about quantification?

- **New field, needs to win over skeptics**
- **IA is abstract and intangible**
- **IA takes place in a business context focused on ROI**
- **IA can be very expensive work**
- **Economic justification/survival**

Even so, are concerns over quantification moot in the long run?

Panelists (in speaking order)

Jesse James Garrett, Adaptive Path

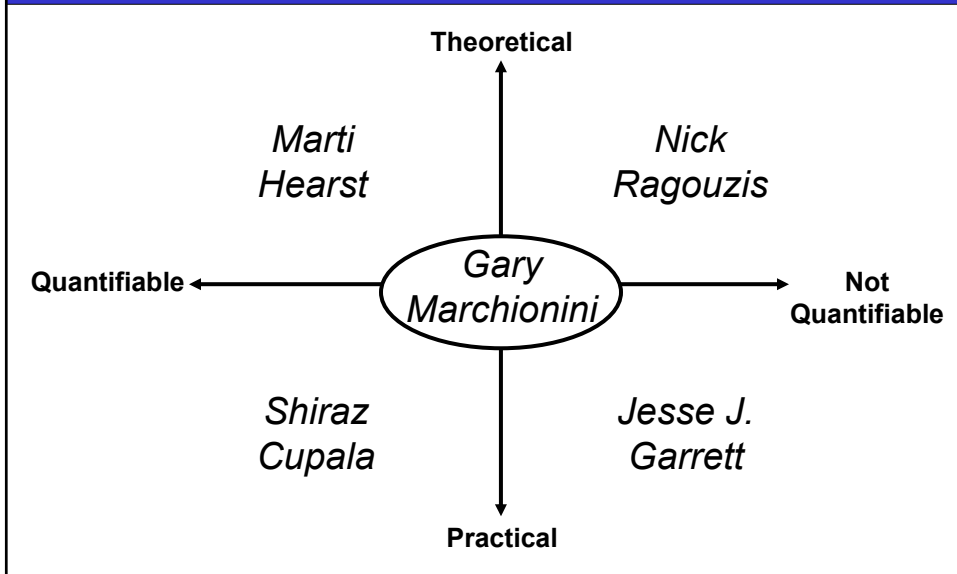
Marti Hearst, UC Berkeley

Nick Ragouzis, Enosis

Shiraz Cupala, Microsoft

Gary Marchionini, University of North Carolina

Panelists' Positions



Format

1. Panelists' position statements (@ 5 minutes each)
2. Discussion and follow-up questions (audience participation *required*)
3. Wrap-up (@ 10 minutes)

Audience participation:

- Questions = good
- Brief points = good
- Long diatribes = very, very bad

Wrap-Up

Panelist summaries

Wrap Up

No right or wrong: aspects and components are quantifiable, but not yet clear that a whole architecture is

Our divisions/axes may be moot; IA is ultimately integrative

Will we be asking this question in the future?

Measuring Information Architecture Quality CHI 2001

Jesse James Garrett

The question at hand:

Can the quality of an information architecture be assessed in a quantitative fashion?

The question we should try to avoid:

What is "information architecture" anyway?

Information architecture

- Lots of definitions
- One common thread: conceptual structure
- Abstract and slippery
- IA on the Web -- abstract made concrete through:
 - Hypertextual navigation
 - Wayfinding cues
 - Labeling systems

The rationale behind quantitative assessment

- Web sites are "made of" data
- All data can be analyzed
- Therefore, sufficiently sophisticated analytical tools can be developed to assess Web sites

But...

- IA exists beyond the Web
- Where there's information, there's architecture -- whether intentional or unintentional
- This suggests a different approach to the question...

A hypothetical question

How would you measure the quality of the information architecture of a college textbook?

- Number of chapters?
- How long those chapters are?
- How many index entries the book has?
- Average number of words on a page?
- Proportion of illustrations to text?

The hypothetical results

Properties of the ideal textbook:

- At least 9 and no more than 17 chapters
- Title of each chapter between 3 and 7 words
- Each chapter must consist of 32 to 68 pages
- No more than 190 words per page
- At least one illustration for every 540 words of text
- No more than 26 illustrations per chapter

The important questions

- Is the textbook divided into **meaningful** sections?
- Are those sections arranged in a **logical** sequence?
- Is the method of presentation **appropriate** to the subject matter and the audience?

How they get answered

Editors and subject matter experts **read** the book!

Reading is fundamental to user behavior

- One question on the user's mind when navigating:
"Is this going to get me [closer to] what I want?"
- Other factors matter, but **words matter most**

Computers can't read

- This problem is ubiquitous, affecting every user on every site
- Teaching computers to read is very, very hard

The central fallacy underlying quantitative assessment:

“Problems arising in a technological context must therefore have a technological solution.”

IA is not a technology problem

It’s a people problem. It takes people to solve it.

Measuring Information Architecture

Marti Hearst
UC Berkeley

A Simple Taxonomy

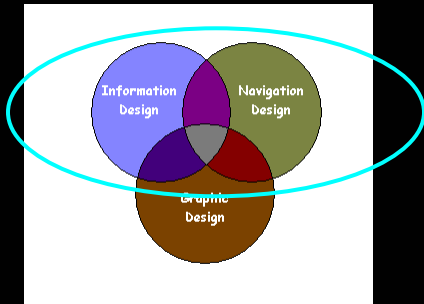
Complexity of Content	<i>high</i>	Catalog Sites Collections	Web-based Information Systems
	<i>low</i>	Web- Presence Sites	Service- Oriented Sites
		<i>low</i>	<i>high</i>

From Mecca et al.,
WebDB'99

Complexity of Applications

A View of Information Architecture

(Newman et al. 00)



- Information design
 - categories of information, labels
- Navigation design
 - determine paths through information structure
- Graphic design
 - visual presentation of content and navigation

Information Architecture

An Important IA Trend

- Generating web pages from databases
- Implications:
 - Web sites can adapt to user actions
 - Web sites can be instrumented
 - “An essential feature of a design environment is to give authors the possibility of evaluating the current network against the final adaptive system.”
 - » Petrelli, Baggio, & Pezzulo, Adaptive Hypertext Design Environments: Putting Principles into Practice, AH 2000

One way to measure

- Analyze properties of existing sites
- CHI '01 paper by Ivory, Sinha, & Hearst
 - Simple measures of surface properties can fairly accurately predict website ratings.
 - Have not yet analyzed site-level architecture



Why measure?

- To learn what works ... and what doesn't
- To test hypotheses
- My current interest:
 - How can an information architecture be designed to successfully convey scent during navigation?

BROWSE

Here you may browse more than 11,000 recipes — much as you would leaf through your favorite cookbook for inspiration, only better. As you explore, you may filter and narrow the recipes by category. Along the way, add any recipes that you like to your [Recipe Box](#). And if you're looking for something to quench your thirst, visit our [Drink File](#) for hundreds of recipes, with or without the kick.

Main Ingredient

[Beans](#), [Beef](#), [Berries](#), [Cheese](#), [Chocolate](#), [Citrus](#), [Dairy](#), [Eggs](#), [Fish](#), [Fruits](#), [Garlic](#), [Ginger](#), [Grains](#), [Greens](#), [Herbs](#), [Lamb](#), [Mushrooms](#), [Mustard](#), [Nuts](#), [Olives](#), [Onions](#), [Pasta](#), [Peppers](#), [Pork](#), [Potatoes](#), [Poultry](#), [Rice](#), [Shellfish](#), [Tomatoes](#), [Vegetables](#)

Cuisine

[African](#), [American](#), [Asian](#), [Caribbean](#), [Eastern European](#), [French](#), [Greek](#), [Indian](#), [Italian](#), [Jewish](#), [Mediterranean](#), [Mexican](#), [Middle Eastern](#), [Scandinavian](#), [Spanish](#)

Special Considerations: [Kid-Friendly](#), [Low Fat](#), [Meatless](#)

Preparation Method

[Advance](#), [Bake](#), [Broil](#), [Fry](#), [Grill](#), [Marinade](#), [Microwave](#), [No Cook](#), [Poach](#), [Quick](#), [Roast](#), [Saute](#), [Slow Cook](#), [Steam](#), [Stir Fry](#)

Season/Occasion

[Christmas](#), [Easter](#), [Fall](#), [Fourth of July](#), [Hanukkah](#), [New Years](#), [Picnics](#), [Spring](#), [Summer](#), [Superbowl](#), [Thanksgiving](#), [Valentine's Day](#), [Winter](#)

Course/Dish

[Appetizers](#), [Bread](#), [Breakfast](#), [Brunch](#), [Condiments](#), [Cookies](#), [Desserts](#), [Hors d'Oeuvres](#), [Main Dish](#), [Salads](#), [Sandwiches](#), [Sauces](#), [Side Dish](#), [Snacks](#), [Soup](#), [Vegetables](#)

BROWSE

Browse > [Poultry](#)

Refine by: [Course / Meal](#) | [Preparation](#) | [Cuisine](#) | [Season / Occasion](#)

- [Appetizers](#) (66)
- [Bread](#) (1)
- [Breakfast](#) (1)
- [Brunch](#) (5)
- [Comments](#) (2)
- [Hors d'Oeuvres](#) (4)
- [Main Dish](#) (308)
- [Salad](#) (66)
- [Sandwiches](#) (46)
- [Sauce](#) (13)
- [Side](#) (10)
- [Snacks](#) (1)
- [Soup](#) (73)
- [Vegetables](#) (2)

1 - 15 of 1000 | [Next >](#)

[1985 CHICKEN PIE WITH BISCUIT CRUST](#)
Gourmet January 1991

[A NINETIES TWIST TO A GRANDMOTHER'S ROAST CHICKEN](#)
Jewish Cooking in America

[ACAPULCO CHICKEN](#)
Bon Appétit

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BROWSE

Browse > Poultry > Hors d'Oeuvres

Refine by : Preparation | Cuisine | **Season / Occasion**

- [Advance](#) (4) [Broil](#) (3) [Marinade](#) (4) [Roast](#) (3) [Slow Cook](#) (1)
- [Bake](#) (8) [Fry](#) (2) [No Cook](#) (1) [Saute](#) (6) [Steam](#) (1)
- [Barbecue](#) (4) [Grill](#) (8) [Quick](#) (6)

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[BRANDIED CHICKEN LIVER PATE](#)

Gourmet March 1996

[BUFFALO WINGS](#)

Epicurious January 1998

[CHICKEN AND BEEF SATES](#)

Gourmet March 1997

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BROWSE

Browse > Poultry > Hors d'Oeuvres

Refine by : Preparation | Cuisine | **Season / Occasion**

- [Christmas](#) (1) [Picnics](#) (4) [Summer](#) (16) [Super Bowl](#) (3) [Winter](#) (12)
- [Fall](#) (4) [Spring](#) (10)

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Epicurious January 1998

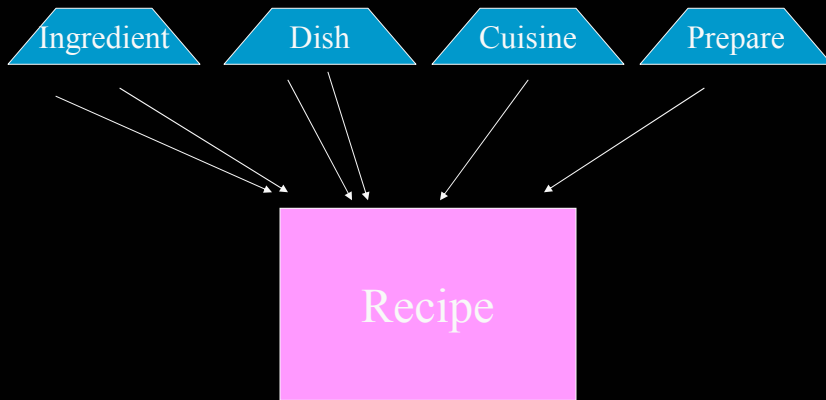
[CHICKEN AND BEEF SATES](#)

Find

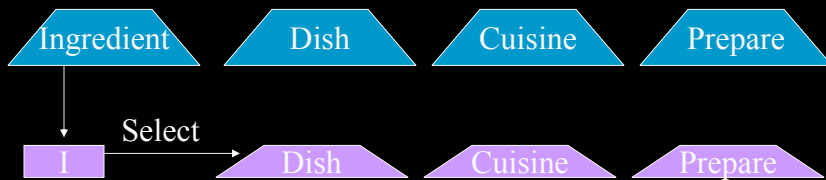
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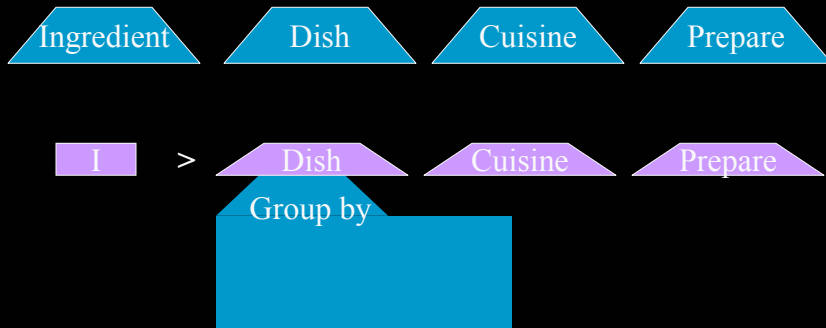
Metadata usage in Epicurious



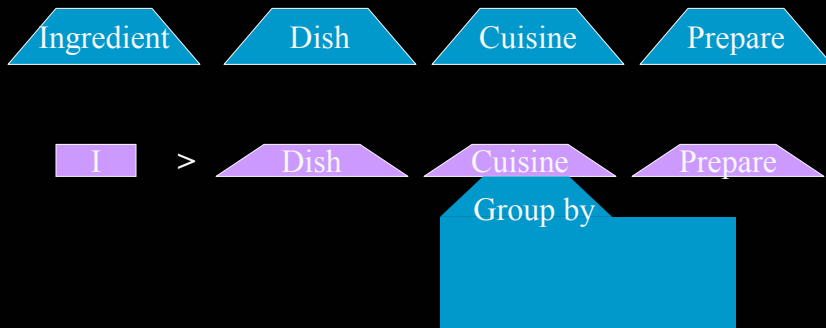
Metadata usage in Epicurious



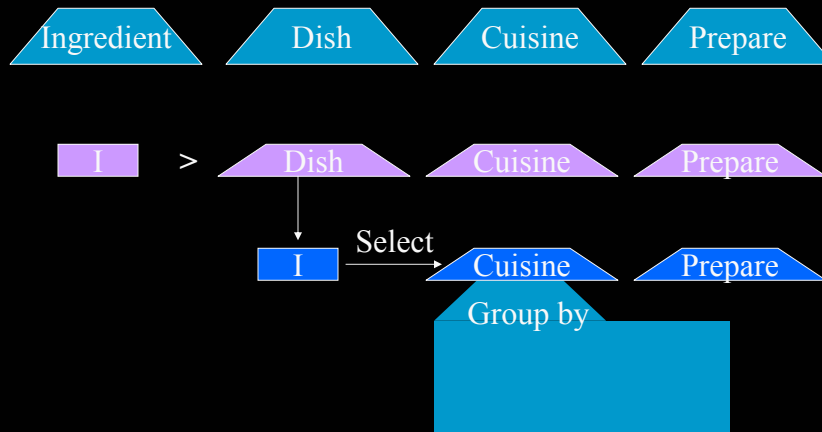
Metadata usage in Epicurious



Metadata usage in Epicurious



Metadata usage in Epicurious



Recipe Information Architecture

- Information design
 - Recipes have five types of metadata categories
 - Cuisine, Preparation, Ingredients, Dish, Occasion
 - Each category has one level of subcategories

Recipe Information Architecture

- Navigation design
 - Home page:
 - show top level of all categories
 - Other pages:
 - A link on an attribute ANDS that attribute to the current query; results are shown according to a category that is not yet part of the query
 - A change-view link does not change the query, but does change which category's metadata organizes the results

Metadata Usage in Epicurious

- Can choose category types in any order
- But categories never more than one level deep
- And can never use more than one instance of a category
 - Even though items may be assigned more than one of each category type
- Items (recipes) are dead-ends
 - Don't link to "more like this"
- Not fully integrated with search

Epicurious Metadata Usage

Problem: lacks integration with search

The screenshot shows the Epicurious website search results for the keyword 'pasta'. The page features the Epicurious logo, a 'RECIPE FILE' tab, and a search bar with the text 'Start New Search'. Below the search bar is a dropdown menu set to 'All words' and a 'FIND' button. The search results are listed as follows:

- [Browse > Poultry > keyword: pasta](#)
- 1 - 15 of 62 | [Next >](#)
- [ITALIAN TURKEY SOUP](#)
Bon Appetit
- [TURKEY NOODLE SOUP WITH TOMATOES](#)
Gourmet November 1990
- [TURKEY TETRAZZINI](#)
Gourmet November 1990
- [PASTA WITH HERBED TURKEY SAUCE](#)
Bon Appetit April 1996
- [TURKEY, TORTELLINI, AND WATERCRESS SOUP](#)
Gourmet November 1991
- [SOUTHWESTERN CHICKEN AND PASTA SALAD](#)
Bon Appetit August 1999
- [PENNE WITH TURKEY AND WILD MUSHROOMS](#)
Bon Appetit August 1999

On the right side of the page, there is an advertisement for Kraft Fall Ideas, featuring a pumpkin and the text 'Fall Ideas', 'Fall Fruit Guide', 'Autumn Outings', and 'Howlin' Halloween Party'.

Questions I want to answer

- How many facets are allowable?
- Should facets be mixed and matched?
- How much is too much?
- How should groups of subhierarchies be revealed?
- How should free-text search be integrated?

How to measure this

- Instrument the information architecture
- Perform usability studies in the form of regression tests
- Measure the results of the IA in use

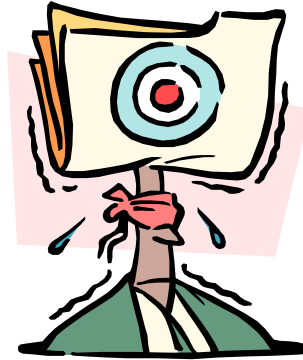
Closing Thought

A terrific challenge:
How to put more science into HCI?

Measuring Information Architecture Quality

The Nebulous Science

Nick Ragouzis, Enosis Group
nickr@enosis.com



ACM SIGCHI, CHI2001 Seattle, Washington

April, 2001

Why are we asking about this?

- Basis:
 - Not: about the research/science domain
 - Rather: about commercial/applied domain
 - In significant, challenging, environments
- Important, relevant?
 - What do we mean? To what extent?
 - Assumptions, Causes, Consequences?

Information will have an Architecture

- Quality is an attribute of value
- An IA is not intrinsically valuable
- Value, in terms of
 - Creation, continuity
 - Users; time, often money
 - Relative to competing forces

Just Wasted Time?

- A sea of assumptions
 - High dimensionality
 - High volatility
 - ... in aspects, degrees, time frames, etc.
- Quality of one IA over another
 - Just another design job
 - Good enough: Just favor one of several IA
- Assumptions more directly addressed by increasing and sifting focus to innovation

Learn what a [website] customer wants and direct them to it

1996

- Only an Information Architect could know what's best

2001

- Just another design job
- IA-in-a-box
 - Automatic; Prescription*
- Heard throughout the interdisciplinary team:

“I’ll do an info architecture on that by Friday.”

Innovation is?

- Which of these flashy, money-hogging, schedule-overrunning, customer-frustrating features would you like to add to your website project today?
- Perhaps you also have some of your own to suggest?



I'd prefer we spend the money on a sweepstakes...

Innovation is?

- Do?, When?; Which combination?
 - Both in basic navigation & interaction structure, and so-called value-adding services
e.g., personalization, chat, real-time services
- Risks in investment, and not
 - Wasted time and money on one, another, or more?
 - Missed something crucial today, next week?

Interdisciplinary Collaborative Design System's Main Job

Innovate, or follow strategically

Innovating Strategically

That's for more than just the website or whatever, right?

- Deliver verifiable improvements in the customer's perceived value



Following Strategically

- Choose, in order to maximize:
 - Differentiation from most serious rivals
 - Affinities with competitors and partners having similar differentiation requirements
 - Competitive power of the explicit or tacit market group to which the follower belongs
 - De facto considerations, where differentiation isn't relatively valuable
 - Follower-specific pathologies

How much innovation?

“In this age companies have lost
the privilege of standing still.”[†]

relative to rivals

[†] 1962, Philip Kotler, Marketing Management

CHI2001, Measuring IA Quality, April 4, 2001

Nick Ragouzis, nickr@enosis.com

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Create customers[†]
more efficiently[‡]
than your important rivals

[†] 1962, Peter Drucker,

“The first task of a company ... *create customers*,” although my meaning in this presentation is not limited to commercial companies and their consumers. Neither do I interpret Drucker as intending such limitation.

[‡] Efficiency in its fully-strategic implications

CHI2001, Measuring IA Quality, April 4, 2001

Nick Ragouzis, nickr@enosis.com

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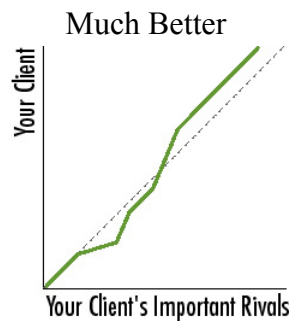
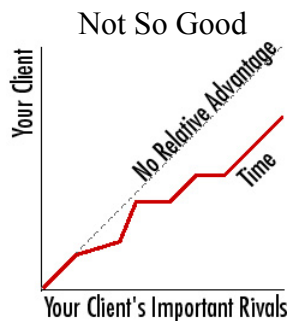
Basic metric
of innovation

A Change?
Simple Growth?

Compound rates of growth ...early, and sustained

- EBIT, NCF/CAO
- Return on reinvestment of customer's investment (their time, operations on their financial gains) matched to customer's ability to further benefit

Efficiently creating customers Relative advantage to rivals



Requires **sustained**
above-average performance

The sounds of average performance

- Parity, more or less
- Do what 90% of other companies do
- Implement de facto practices
- Follow 75%-likely recommendations
- Improved conversion rates on launch and...
- The quality of an information architecture

Summary

- Justifying IA? It's the wrong question
 - Times have changed
- What was IA is, rather, a design job
 - For the organization's entire design system
- Deliver verifiable improvements in the customer's perceived value
- Innovate or follow, strategically
 - Do so persistently; rates of growth, compounded
- The fittest wins
 - Beware short-term, false, maxima!

Thank You

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