



May 24, 2007

Modified-Delphi Card Sorting

Celeste Lyn Paul
cpaul@user-centereddesign.com

Overview of Card Sorting

What is card sorting?

- Participants sort information in to categories
- User-centered design activity
 - Participatory, involves users
- Method to find patterns in information
- Cheap and easy
- Several types of card sorts

Closed card sorting

- Used later in the design process
- Cards are sorted in to predefined categories
- Can be used in two ways:
 - Evaluate an existing design
 - Add new content to an existing design

Inverse card sorting

- Variation of a closed card sort
- Used later in the design process
- Participants find cards in an existing structure
- Can be used to validate a design



Open card sorting

- Used early in the design process
- Cards are sorted in any order
- Quantitative way to generate information to aid in IA design

Weaknesses of open card sorting

- Requires at least 20 participants
 - Cost of stipends and multiple days of facilities
 - Expensive for a pre-design activity
- Mentally exhausting for participants
 - Difficult to organize information they don't know
 - Repeated work for the information they do know
- Difficult to analyze
 - 20 participants * 50-100 cards = a lot of work!

Ways to improve

- Use fewer users
- Limit repeated work
- Reduce costs
- Take a qualitative approach
- Get better results overall

The Delphi Method

Introduction to the Delphi method

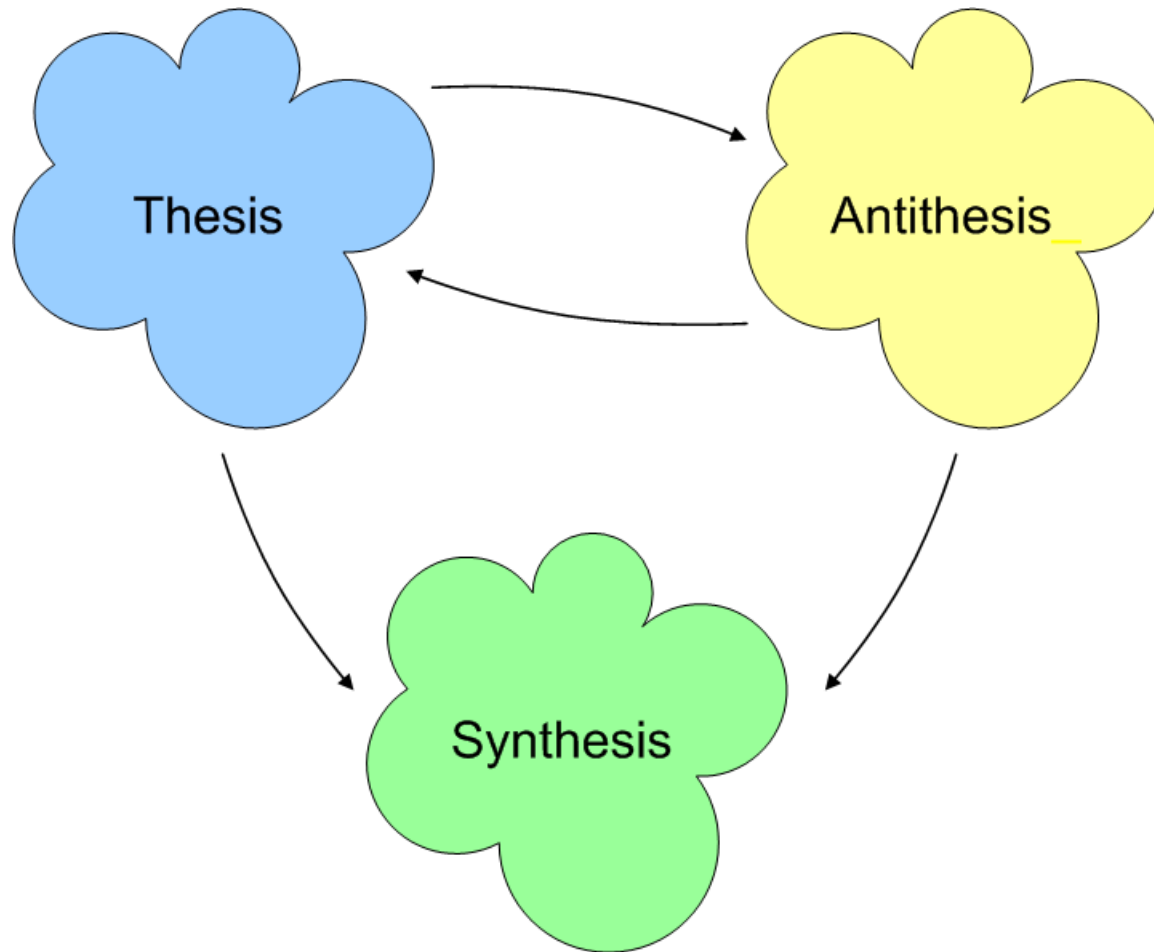
- Developed by the Rand Corporation
 - Military forecasting technique
- Moderated group communication
 - Accounts for personal experience and opinion
 - Reduces bandwagon and halo effects
- Other forecasting applications
 - Technology, population sciences, business



Delphi in action

- Each participant is...
 - asked to provide an answer to a problem
 - given previous participants work to review
 - allowed to modify their work after review
- They have a chance to provide their answer before being influenced
- They have a chance to revise their answer based on new information

Delphi consensus model



Delphi concepts

- It is the “Wisdom of Crowds”
- The opinions of other can be...
 - Influential, valuable, insightful
- Structured information flow
 - Moderated knowledge gathering
- Collaboration with controlled bias

Existing UCD-Delphi methods

- Delphi method of interviewing
 - User research method for gathering information from a client or customer
 - Example: researching user groups of a product
- Iterative User Testing
 - Participants interact with a product and are shown an alternative
 - Feedback is integrated in to the next session

Applying Delphi to card sorting

- Each participant is...
 - ~~asked to provide an answer to a problem~~
 - given previous participants work to review
 - allowed to modify their work after review
- Why modified?
 - There is no single right answer
- Quality > Quantity



Modified-Delphi in a nutshell

- First participant (seed) creates initial structure
- Second to the last participant comment on the previous participant's work and make changes
 - 8 to 10 participants should be sufficient
- Card structure will evolve in to a consensus

Case Study: University of Baltimore Law School



UB Law School website study

- 90 cards with high-level website topics
- Law students, Pre-law students, Administrators, Professors, Law professionals, Attorneys
- Both Open and M-Delphi Card Sorting methods used



Open card sorting group

- 10 participants
 - Balanced mix of user groups
- Asked to organize cards in to groups in how they think makes sense
- Results from each participant were analyzed in an affinity map



M-Delphi card sorting group

- 8 participants
 - Balanced mix of user groups
- Asked to modify the (previous participant's) results to match their own organization
- Results from each participant were analyzed in an affinity map
 - Special interest was taken with the last participant's results

Open card sort instructions

Here are cards which represent topics on the Law School website. I would like you to take a look at all of the cards, then organize them in groups in a way that makes the most sense to you.

Once you have your groups I want you to give each one a name. You may change a label if it is unclear. If you feel something is missing, you may add it, or if you feel something does not fit, you can discard it.



M-Delphi card sort instructions

Here are cards which represent topics on the Law School website. They have already been sorted by a previous participant in a way that made sense to them. I would like you to take a look at their work and then make any modifications you feel would make better sense to you. This includes the labels they have given to the groups.

You may change a label if it is unclear. If you feel something is missing, you may add it, or if you feel something does not fit, you can discard it.

Analyzing the data

Open Card Sort

- 19/90 cards had > 50% agreement (21%)
- 8/11 final categories represented

M-Delphi Card Sort

- 66/90 cards had > 50% agreement (73%)
- 9/10 final categories represented

Final M-Delphi participant

- 8 of the 10 final categories present
 - One category was merged and renamed to make it 9
- Only 7 cards did not match with final structure
 - There were several “floater” cards
- Less than the original 90 cards were used
 - 9 new cards/topics were added
 - 75 cards total plus several “grouped” cards

Preliminary validation results

Open Card Sort

- Heuristics: 3.5/5.0
- Rank sum:
1/8 responses
(3 neutral)

M-Delphi Card Sort

- Heuristics: 4.0/5.0
- Rank sum:
4/8 responses
(3 neutral)

Interesting bits about the study

- Open card sort participants hardly talked
 - M-Delphi participants were very active
- 3 M-Delphi participants scooped up the cards and started from scratch
 - Their results were still *very* similar to the previous structure
- Open card sort data took more than twice as long to analyze

Summary

Comparison

Open Card Sort

- ~ 20 participants
- More work for participants
- More to analyze
- Quantity of results

M-Delphi Card Sort

- 8-10 participants
- Less work for participants
- Easier to analyze
- Quality of results

Modified-Delphi card sorting

- Used early in the design process
- Looking for information patterns
- Collaboration with moderated bias
- Evolution of a single structure rather than an average of many

Who to recruit

- Traditionally a method of expert opinion
- Participants are “experts” of a product
- Similar recruiting as for other UCD methods
 - Target audience
 - Primary user group
 - Single user group

Seed Participant

- Hardest job of creating the initial structure
 - Same amount of work as open card sorting
- Different methods for choosing the seed
 - Information architect creates the initial structure
 - Expert (IA) assists seed with initial structure
 - Single participant works alone
 - Multiple participants work together

No consensus? No problem!

- Unfamiliar or unclear information
- Too much information
- Multiple conceptual models
- There is “no answer”

Summary

- Modified-Delphi card sorting is...
 - A synthesis of every participant's ideas
 - An evolution of information
- Benefits of Modified-Delphi card sorting
 - A single information structure than many
 - Comments and insight from 8 to 10 participants
 - Familiar qualitative methodology
 - Lowers costs of time, money, effort



Future Work

- Validating the results of Law School study
 - Qualitative and quantitative measures
- IA Institute
 - Process grant report, June 2007
- Graduate Thesis
 - University of Baltimore, July 2007

Acknowledgments

❖ The Information Architecture Institute





Questions?

Celeste Lyn Paul
cpaul@user-centereddesign.com