Surveys that work

Using questionnaires to gather useful data

Caroline Jarrett

Seattle 2010

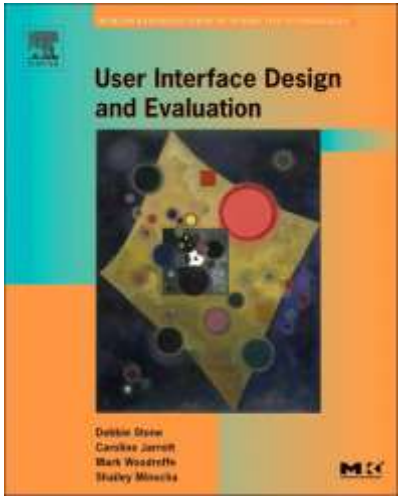
A bit about me: Caroline Jarrett

Consultancy: www.effortmark.co.uk

Training: www.usabilitythatworks.com

Forms advice: www.formsthatwork.com

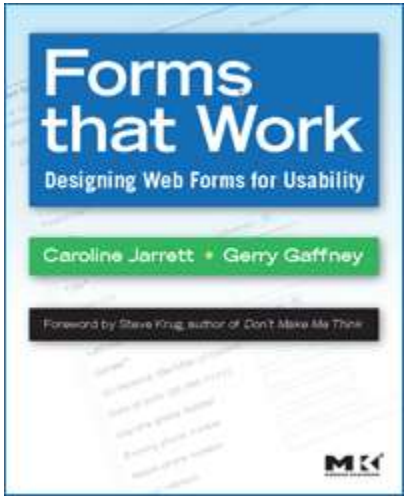
Editing tips: www.editingthatworks.com



Stone, Jarrett, Woodroffe and Minocha (2005)

User interface design and evaluation

Morgan Kaufmann / Elsevier



Jarrett and Gaffney (2008)

Forms that work: Designing web forms for usability

Morgan Kaufmann / Elsevier

Agenda

8:30	Introduction: your interest in surveys
8:45	Survey definitions and jargon
9:00	Comparing processes
9:30	What the experts say about process
10:00	Break
10:15	Survey error and how to avoid it
11:00	Details of survey design
12:30	Close

Write down your answers to this questionnaire

1. How many user surveys have you run?

NONE 1 to 5 6 to 10 more than 10

2. What is your top tip for a better user survey, based on experience of writing or answering?

_____

_____

Now try it as an interview

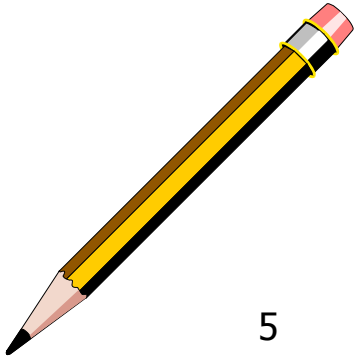
1. How many user surveys have you run?

NONE 1 to 5 6 to 10 more than 10

2. What is your top tip for a better user survey, based on experience of writing or answering?

_____

_____



Now tell each other a story about your experience relevant to these questions

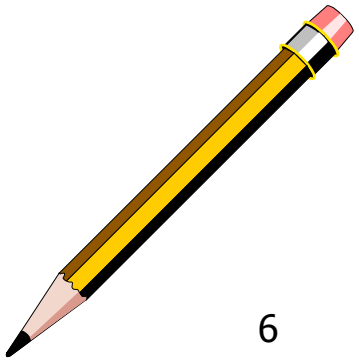
1. How many user surveys have you run?

NONE 1 to 5 6 to 10 more than 10

2. What is your top tip for a better user survey, based on experience of writing or answering?

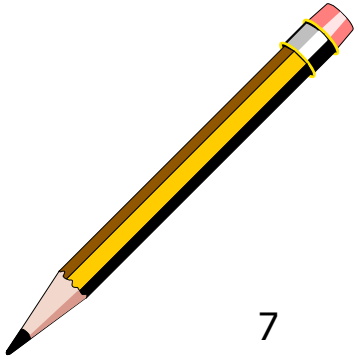
_____

_____



Now let’s share data and stories

- What numbers have we collected?
- What open answers?
- What stories?



Outline

Survey definitions and jargon

Comparing processes

What the experts say about process

Survey error and how to avoid it

Details of survey design

What is your definition?

- What is a survey?
- What is a questionnaire?
- What is an interview?

The survey methodologist's terms are different from everyday usage

- A survey:
  - The process of specifying, gathering, processing, and reporting data
  - Some authorities use the term 'questionnaire' for the survey
- The instrument:
  - The list of questions and allowed answers
  - Some authorities use the term 'questionnaire' for the instrument
  - Also sometimes called a 'script' or a 'question protocol'
- The respondent:
  - The person who provides the answers
- The administration method:
  - 'Self-administered': the respondent works directly with the instrument
  - 'Interviewed': there is an interviewer (face-to-face or by telephone)

The definitions we're using for today

- A survey:
  - The process of specifying, gathering, processing, and reporting data
- A questionnaire:
  - The list of questions and allowed answers
- The respondent:
  - The person who provides the answers
- An interview:
  - An interviewer talks with a respondent
  - Could be face-to-face, on the phone, by email

For today's purposes, we'll use interview or questionnaire like this

- Interview
  - Talk to the user
  - Interviewer captures the answers
  - Small samples
  - Interviewer has discretion to vary the details of the interview
- Questionnaire
  - Do not talk to the user
  - Receive written answers from user
  - Large samples
  - Wording and (some) answers are fixed

A bit more jargon-busting

- Skip
  - You have to jump over some questions because they are not relevant
- Routing
  - The overall process of getting round the skips and questions
- CATI
  - Computer Assisted Telephone Interviewing
  - The interviewer reads from a script provided by a computer
  - The computer automatically does the skips for the interviewer
- CAPI
  - Computer Assisted Personal Interviewing
  - Like CATI, but when the interviewer is face-to-face

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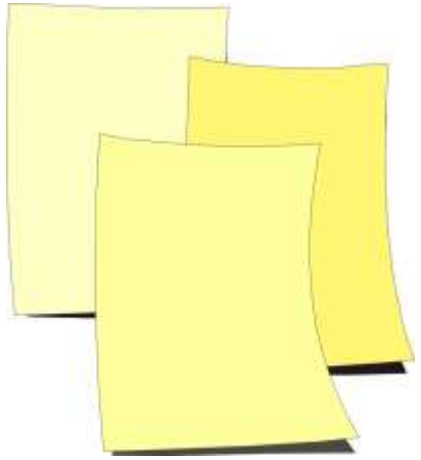
Let's compare processes

- Think about the process of developing a survey
  - If you currently run surveys, think about a typical recent one
  - If you don't, think about what a survey development process might be
- Write each step in your process on a sticky note
- Number each step in order
- Put your initials or name on each step
- Then we'll do some comparing



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An ideal survey process

Investigate	Create	Develop	Deploy	Analyse
• Establish your goals for the survey • Interview your users	• Work out your questions • Design your sampling strategy	• Build the questionnaire • Pilot your survey	• Run the survey from approach to follow-up	• Create summaries and comparisons • Present the results

Investigate

Create

Develop

Deploy

Analyse

Set goals for the survey

Interview target users

Check: have you met your goals?

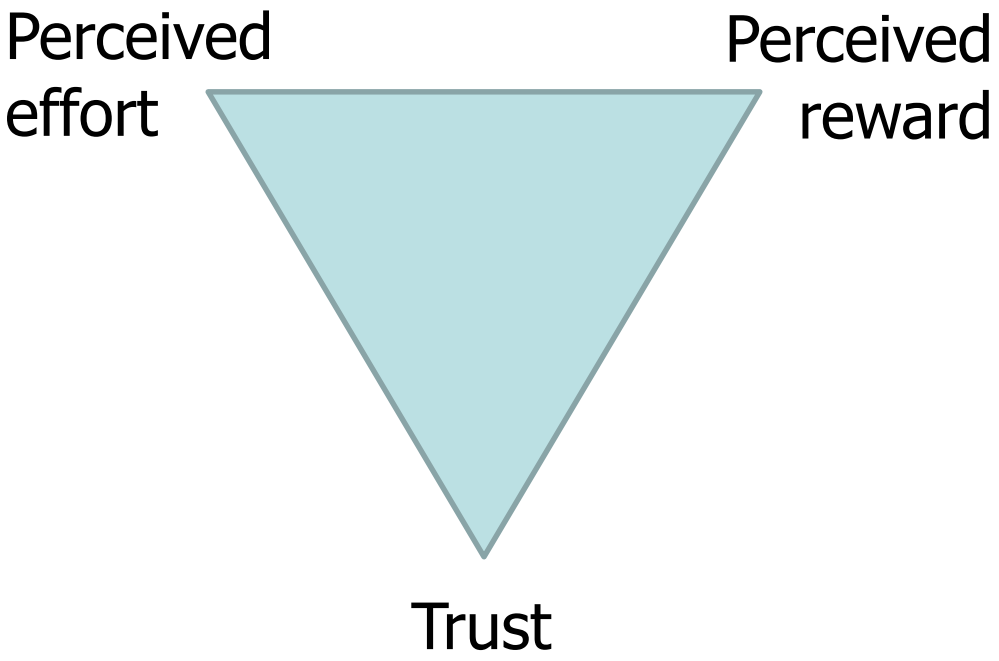
Set goals for the survey

- Who wants the results of the survey?
- What decision will you/they make based on the answers?
- Where are the users located?
- When do you need the results?
- Why do a survey
  rather than something else?

Interview some target users

- What you do:
  - Check that you have the right group
  - Establish correct language
  - Find out what they want to tell you
- Why you do it:
  - Surveys that are interesting get a better response rate

Response relies on effort, reward, and trust



Dillman, D.A., Smyth, J.D. and Christian, L.M. (2009)
Internet, Mail and Mixed Mode Surveys: The Tailored Design Method

Investigate

Create

Develop

Deploy

Analyse

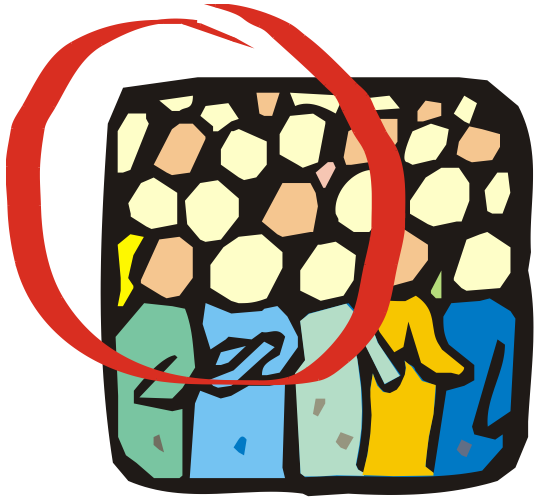
Design your sampling strategy

Work out your questions

Check: have you met your goals?

Decide on the target group

- Who are they?
- Do they all own the same information?
- Census or sample?
- Do they want to tell you the information?
- How will you find them?



Use all your technical communication skills to write good questions

- Mix question types: choice and open
- Use appropriate, unambiguous language
- Avoid leading questions
- Present one question at a time
- Keep questions concise
- Keep positive; negatives are harder to understand

Questions are slippery and do unexpected things

Don Dillman

> *"Similar to driving in freeway traffic while drinking a cup of hot coffee and answering an emergency call on a cell phone … Many things are competing for attention and failure to heed any of them can spell disaster"*

Meanings change in context

- “Frequent”
  - Heart attacks
  - Headaches
- “Within the last week”
  - Working week
  - Week and weekend
  - Seven days up to today

Meanings change in context

- According to the question
  - How many children in your family?
  - Is there any history of cancer in your family?
- According to the context of the question
  - What is your income?
    - Tax authority
    - Salary survey
- According to the answer categories
  - Do you own a car? Yes No
  - Do you own a car? Own Lease Both Neither

Is the user's meaning the same as yours?

- Are you a director?
  - User meaning: job title such as director of a play
  - Tax meaning: responsible for financial decisions made in the business, job title doesn't matter
- "It is easy to get data files in and out of this system:

  Agree Undecided Disagree"
  - User answer: undecided
  - User doesn't understand the question

How happy is your marriage?

- First group:
  - How would you describe your marriage? 63% ‘very happy’
  - How would you say things are these days? 38% ‘very happy’
- Second group:
  - How would you say things are these days? 52% ‘very happy’
  - How would you describe your marriage? 70% ‘very happy’
- Putting the marriage question second:
  - Increases reported marital happiness by 7%
  - Increases reported general happiness by 14%

Schuman and Presser, 1996

How many hours a day do you study?

Low scale

- ½ hour or less
- From ½ to 1 hour
- From 1 to 1 ½ hours
- From 2 to 2 ½ hours
- More than 2 ½ hours

High scale

- 2 ½ hours or less
- From 2 ½ to 3 hours
- From 3 ½ to 4 hours
- From 4 to 4 ½ hours
- More than 4 ½ hours

Scale influences the response

	Low scale	High scale	Box
Up to 2 ½ hours	70%	29%	42%
More than 2 ½ hours	30%	71%	58%

Organize the questions to grab the respondent's attention

- Keep to one topic at a time
- Start with questions that are interesting
- Move from less invasive to more invasive
- Minimize requests for personal information

Sorting out the topics: group these ones

- What was your total family income in 2009?
- Do you like to play golf?
- What is your opinion on global warming?
- Are you married?
- Which political party does the best job of promoting economic growth?
- How many times have you gone bowling in the last year?
- What is your political party preference?
- Do you favour or oppose higher tax on fuel as a measure to reduce environmental pollution?
- What is your occupation?
- Please describe your favourite recreational activity.
- How old are you?

Adapted from Dillman et al, p157

Write a preamble that creates a social exchange

- Provide sufficient and clear instructions
- Tell participants what the survey is for
- Can they receive results if interested?
- Are responses anonymous or confidential?

Investigate
Create
Develop
Deploy
Analyse

Build the instrument

Pilot your survey

Check: have you met your goals?

Test the survey

- Is the time involved to complete the survey appropriate?
- Are questions clear and unambiguous?
- Are you targeting the correct group?
- Is the survey interesting for the respondents?

Prepare the final survey

- Use the test findings to refine the survey
- Try analyzing the results
- Check the results against the survey goals
- Eliminate off-topic questions
- Confirm delivery method for target group

Investigate
Create
Develop

Deploy

Analyse

Run the survey from approach to follow-up

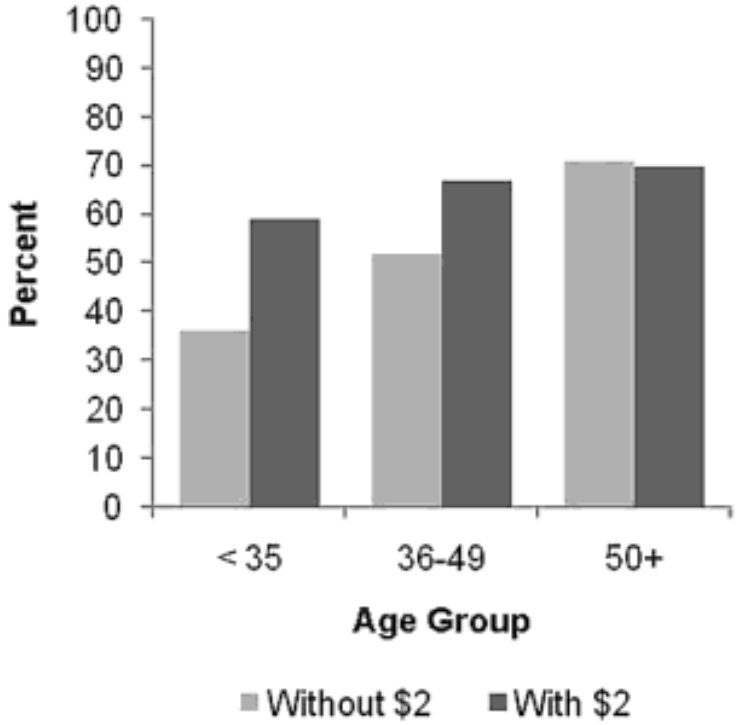
Check: have you met your goals?

Run the survey from approach to follow-up

- Send the pre-notice from the survey sponsor
- Send the survey with token incentive
- Send a reminder message (no further incentive)
- Send a second copy of the survey
- Thank participants

A token incentive works better than no incentive or a prize draw

Figure 7.3 Effects of a $2 incentive on the age composition of a completed sample of new driver's license holders in Washington State.



Source: The Influence of Different Techniques on Response Rates and Nonresponse Error in Mail Surveys, by K. J. Miller, 1996, Bellingham, WA: Western Washington University. Unpublished master's thesis.

Investigate
Create
Develop
Deploy

Analyse

Turn the raw data into results

Present your results

Check: have you met your goals?

Compile responses

$	# answers
0	62
50	34
100	131
150	25
200	57
250	32
300	31
500	84
1000	44
2000	17
3000	8
5000	7

$250/class-up to 3 classes. $150 for tests-up to 2

depends upon my employers contribution

$250? initial, plus $50? each 'renewal'

42

$30 - unless my company agreed to pay it ;-)

don't know-I would want my emp'er to pay

$300 first time, $100 for renewal

Have no basis for comparison.

$300 for a 5-year certification

I can't say-depends entirely on the certification

“I’ve finished the report for you”

Publish results - gently

- Don’t surprise people with bad news
- Make sure publication is timely
- Keep reports short
- It’s OK to have some gaps in the results, “more work needed”

Outline

Survey definitions and jargon

How we go about surveys

Survey processes in theory

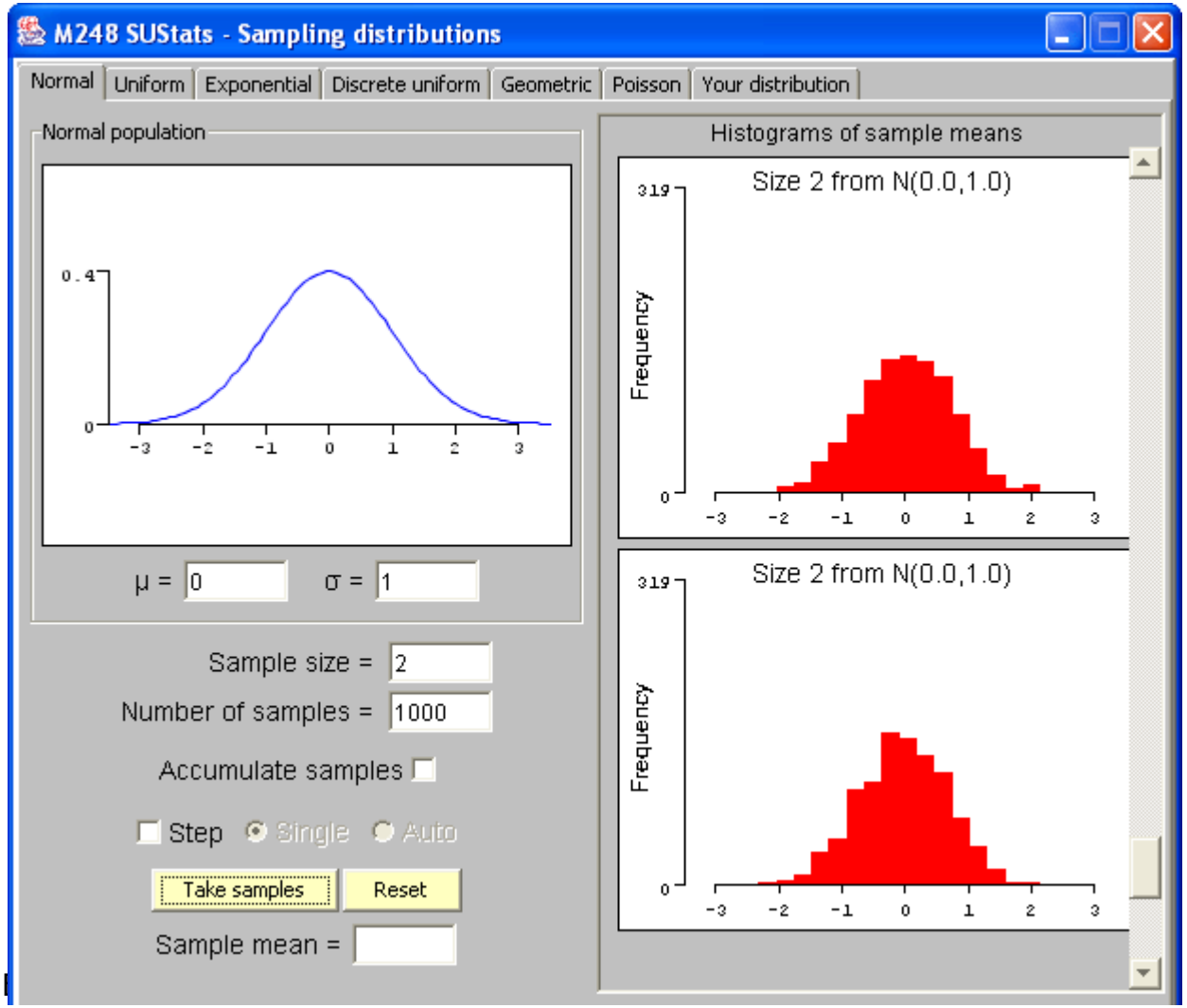
Survey error and how to avoid it

Details of survey design

There are four types of survey error

- Sampling:
  - Some respondents get left out
- Non-response:
  - The people who do respond are different to the people who do not
- Coverage:
  - Some of the population is not included in the sampling frame
- Measurement:
  - Asking the wrong question

You can't avoid sampling error



Avoid non-response error with a better response rate

- More respondents means fewer who do not respond:
  - Less follow-up
  - Less opportunity for them to share factors in common (but different to the respondents)
- The other theory:
  - A low response rate may be independent of any factor
  - About 1% of people just like answering questions
  - This propensity is not correlated with any other factor

http://www.usabilitynews.com/news/article2528.asp

Dillman recommends mixed-mode surveys to avoid coverage error

- Telephone surveys have coverage problems:
  - Unlisted numbers
  - 'Do not call' numbers
  - Cell phone-only households
- Mail surveys have coverage problems:
  - New delivery points
  - Shared delivery points
- Internet surveys have coverage problems:
  - People without internet access
  - No directory of email addresses
  - Spam filters

Avoid measurement error by being careful

- Investigate well to have clear goals
- Create well to have good questions
- Keep testing everything, all the time
- Make sure that you analyse the data from your pilot

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Details of survey design

What is a Likert scale?

Number of points in a response scale

Grids and how to avoid them

A typical definition of Likert scale includes named response points

- “A typical question using a Likert Scale might pose a statement and ask the respondent whether they Strongly Agree - Agree - Undecided - Disagree or Strongly Disagree.”

Two easy-to-find definitions of Likert scales

- “A typical question using a Likert Scale might pose a statement and ask the respondent whether they Strongly Agree - Agree - Undecided - Disagree or Strongly Disagree.”
  - http://www.icbl.hw.ac.uk/ltdi/cookbook/info_likert_scale/
- “Rensis Likert (1932) developed a direct measure of attitudes called the Likert Scale. A Likert Scale adds up responses to statements representative of a particular attitude”.
  - http://www.gerardkeegan.co.uk/glossary/gloss_l.htm

Likert was trying to pin down slippery attitudes

- A Likert scale of statements about ‘helpfulness’
  - The instructions and prompts are helpful.
  - I find that the help information given by this system is not very useful.
  - The way that system information is presented is clear and understandable.
  - There is never enough information on the screen when it's needed.
  - I can understand and act on the information provided by this system.
  - The system has helped me overcome any problems I have had in using it.
  - The organisation of the menus seems quite logical.
  - Error prevention messages are not adequate.
  - The quality of the help information varies across the system.
  - It is easy to see at a glance what the options are at each stage.
- The statements are analysed statistically as a group.

From IR-SUMI: the Inland Revenue variation on SUMI

Make the ‘helpfulness’ questions more useful?

- If you had to choose just one ‘helpfulness’ question, which would it be?
- Runner up?
- What action would you take based on the answer?

Grids combine questions using Likert-like scales

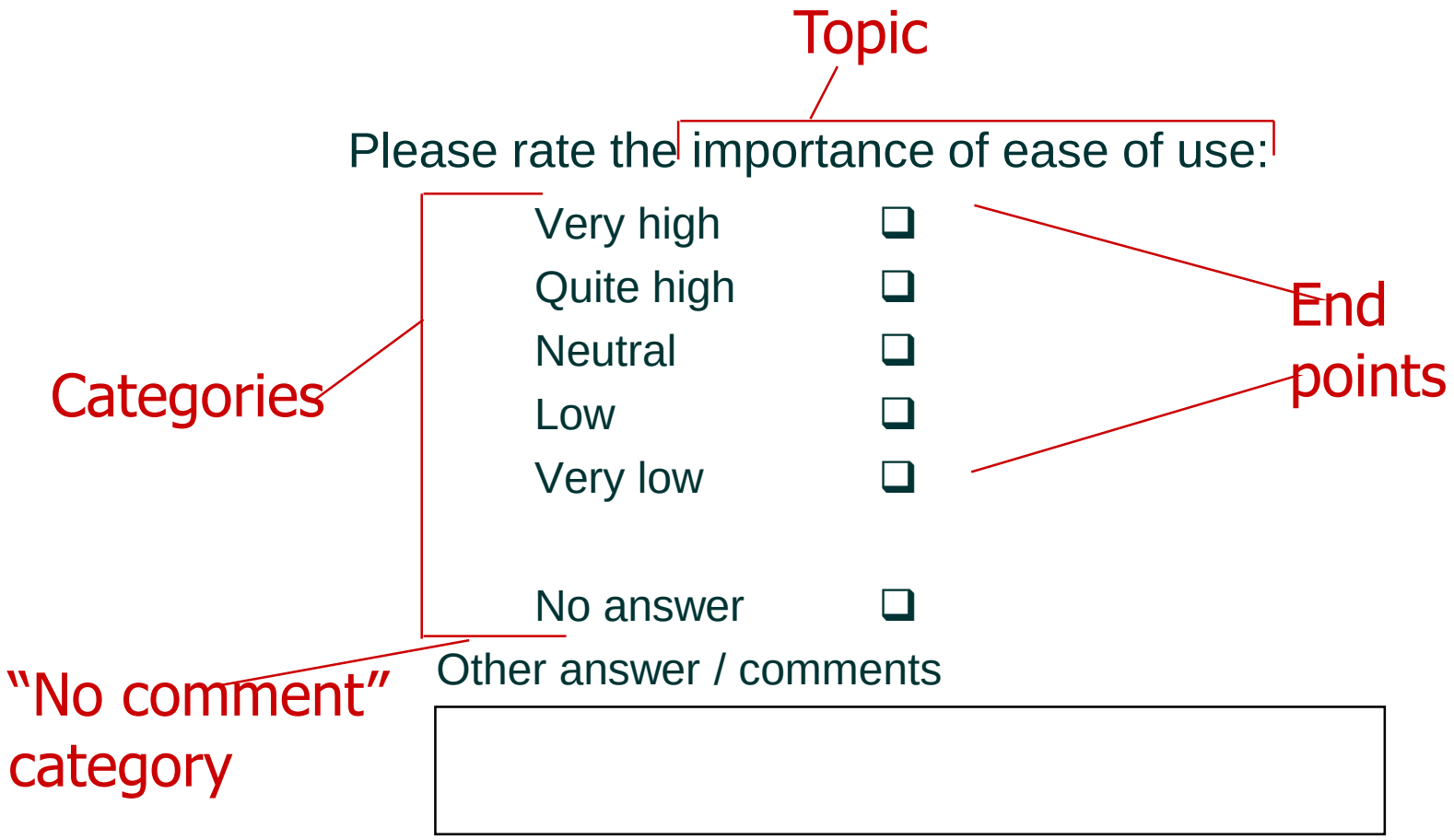
As a result of visiting The Dancing On Ice site, how likely are you to do the following.

	Extremely likely	Likely	Neither likely nor unlikely	Unlikely	Extremely unlikely
Look for more coverage of Dancing On Ice online	○	○	○	○	○
Recommend the site to someone else	○	○	○	○	○
Visit the site more often than you currently do	○	○	○	○	○
Watch more of Dancing On Ice on TV	○	○	○	○	○
Explore more of what itv.com has to offer	○	○	○	○	○
Visit the site again	○	○	○	○	○
Start following Dancing On Ice on Facebook or Twitter	○	○	○	○	○

55%

Next

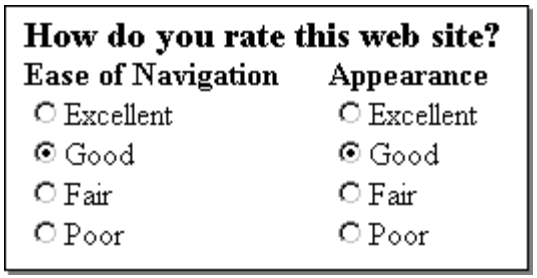
Anatomy of a response range



A good response range has four key attributes

1. Easy to associate response with category
2. Balanced end-points
3. Allows user to over-answer or not answer
   - “no comment” category
   - space for comments
4. Thoughtful choice of default

All of these examples have unbalanced ranges



The top example does not allow for ‘other’; the other example isn’t consistent

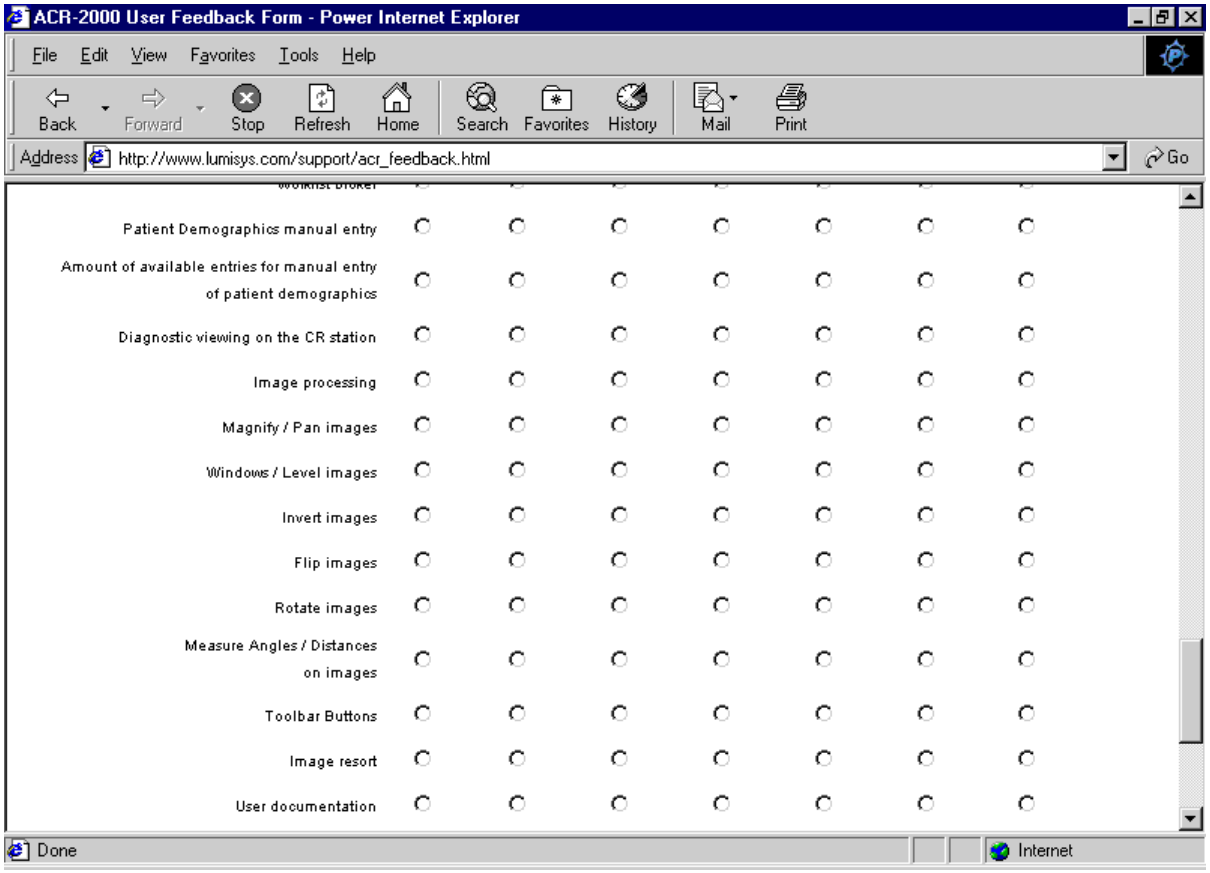
8. How long do you usually spend on a visit to this site?

- ○ Less than 10 minutes
- ○ 10 to 30 minutes
- ○ 30 minutes to an hour
- ○ More than an hour

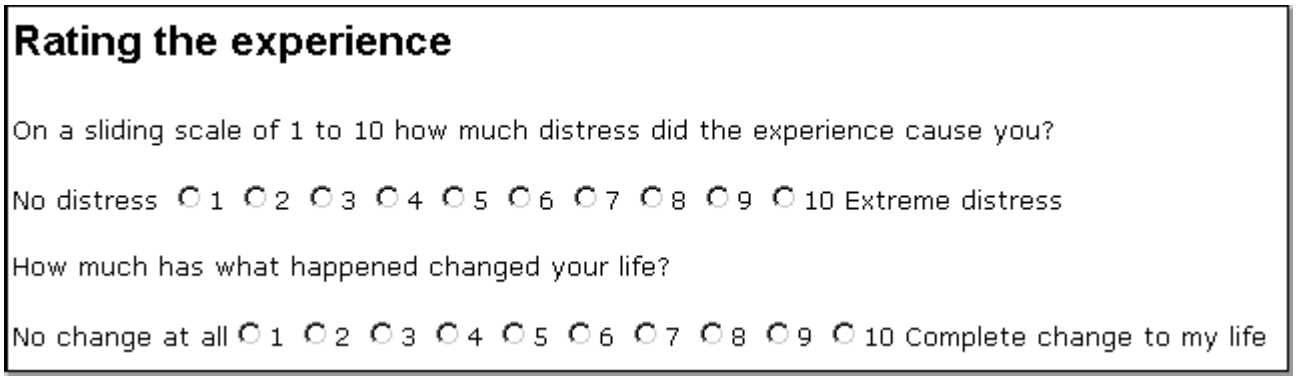
How often do you...	Once a study	Once a shift	Daily	Weekly	Monthly	Other (Specify)
Archive images?	○	○	○	○	○	
Run self test manually?	○	○	○	○	○	
Restart the workstation?	○	○	○	○	○	
Have the scanner calibrated?	○	○	○	○	○	

How do you rate the following features?	Not Used	Very Unsatisifed	Moderately Unsatisifed	Somewhat Unsatisifed	Somewhat Satisfied	Moderately Satisfied	Very Satisfied
Installation, training & support?	○	○	○	○	○	○	○
CR hardware?	○	○	○	○	○	○	○
Plate Eraser?	○	○	○	○	○	○	○
Software in general?	○	○	○	○	○	○	○

Make sure that it is easy to associate the response and the category

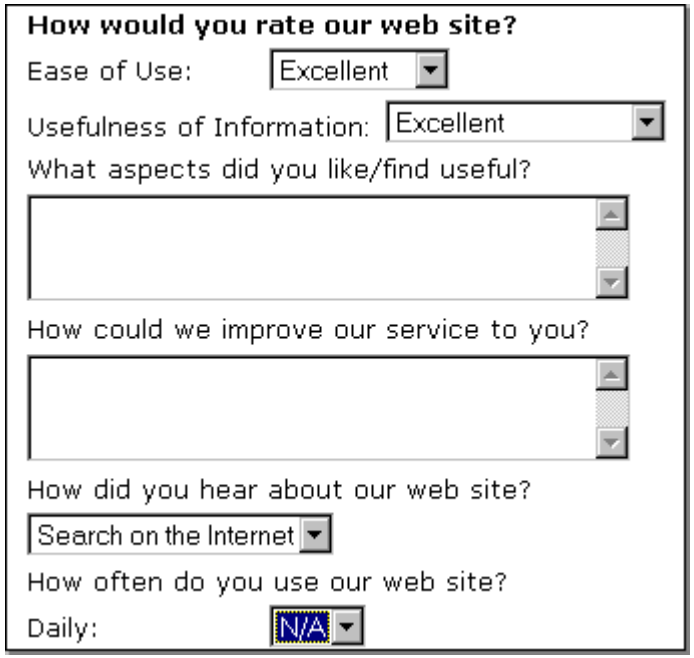


This psychological scale should allow the user to ‘over answer’ (but it doesn’t).



Equally important:
allow user to decline to answer

Be careful about offering a default



- Rule of thumb:
  - On forms, consider the most common choice as default
  - On questionnaires, offer neutral or "-enter choice-" as default

In testing, participants gave 6 reasons for choosing the midpoint of a three-point scale

- Example: series of topic statements
  - "This system responds too slowly to inputs."
- Three category choices
  - User chooses from "Agree Undecided Disagree"
- Reasons for choosing "Undecided"
  1. Neither agree nor disagree
  2. Sometimes agree and sometimes disagree
  3. Don't know
  4. Not interested
  5. Don't understand the topic statement
  6. Not up to me to comment on this point

Adding extra steps in the range shows no improvement for usability (but may statistically)

Steps	Effect
3	Uncomfortable. Users like to ‘shade’ their answers
4	Uncomfortable. No mid-point
5	Best choice
6	Creates ambiguous centre
7	Users move to ‘top 5’ or ‘bottom 5’
Over 7	Same problems as for 6 and 7, only worse. End and middle effects

Exceptions to the 5 point rule

- Offer more than 5 points if:
  - You are asking about complex attitudes and users really, truly want to express subtle differences
  - When you test your questionnaire, your users insist that they want more than 5
- Don’t offer any points for numeric answers (such as hours of watching television). Ask for a value instead.

Summary: a good response range

- Categories
  - All categories meaningful for topic
  - Try to be as comprehensive as you can
  - Allow for exceptions: “other” category
- Easy to associate response with category
- Balanced end-points
- Allows user to over-answer or not answer
  - “no comment” category
  - space for comments
- Thoughtful choice of default

Acknowledgement and references

- Thanks to Karen Bachmann
  - Workshop started as one that we presented together in 2002 and 2003
- Books on survey design
  - Dillman, D.A., Smyth, J.D. and Christian, L.M. (2009) Internet, Mail and Mixed Mode Surveys: The Tailored Design Method
    - Very practical, informed by many years' research. Written in a straightforward style.
    - The earlier editions (1999 and 2007) are also good and you may be able to get one cheaply second-hand
  - Gilham, Bill (2000) "Developing a questionnaire" Continuum Books
    - Thin, clear and practical book that takes you through the survey process.
    - My edition is the 2000; there is a newer one in 2008 which I'm sure will be even better
  - Schuman, H. and Presser, S. (1996) "Questions and Answers in Attitude Surveys: Experiments on Question Form, Wording, and Context"
    - Thorough analysis of all the ways in which questions can be slippery, based on many years' research.

Wrap up and feedback

Caroline Jarrett

carolinej@effortmark.co.uk

+44 1525 370379

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Diagram 1
An ideal survey process

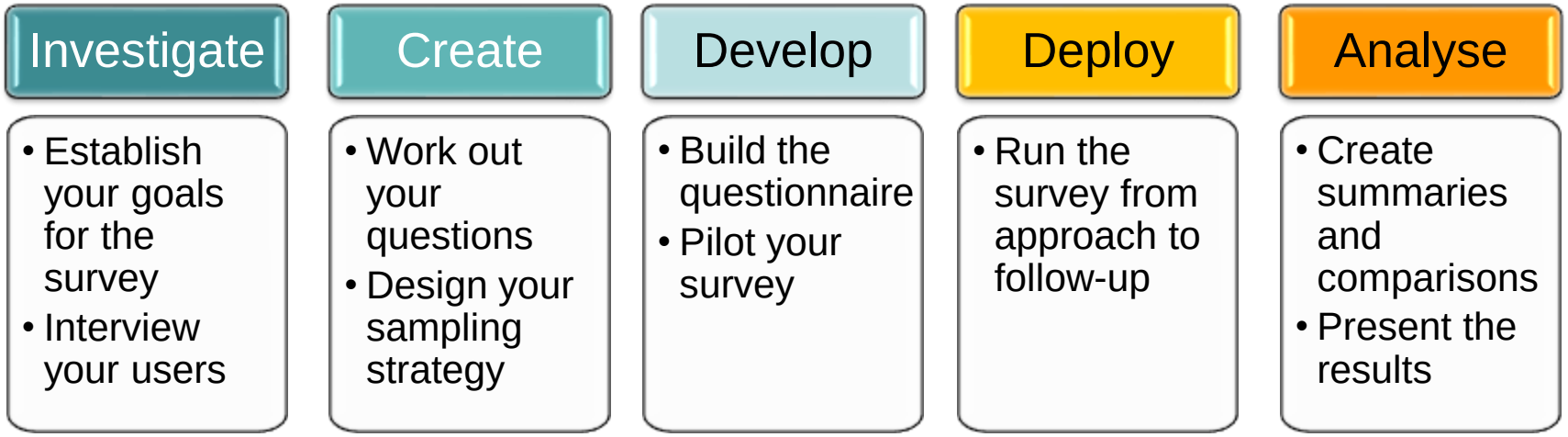


Diagram 2
An ideal survey process

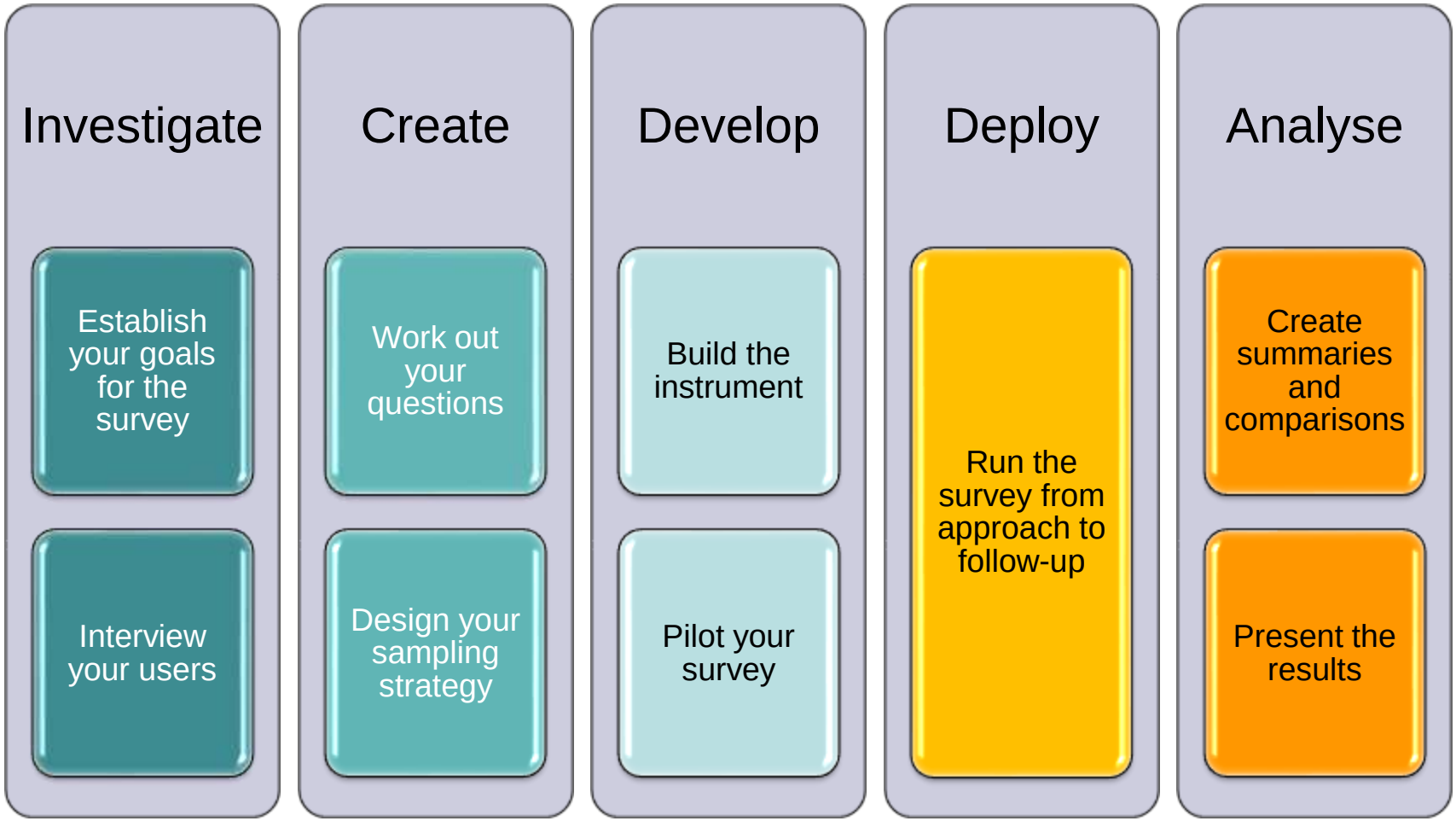


Diagram 3
An ideal survey process

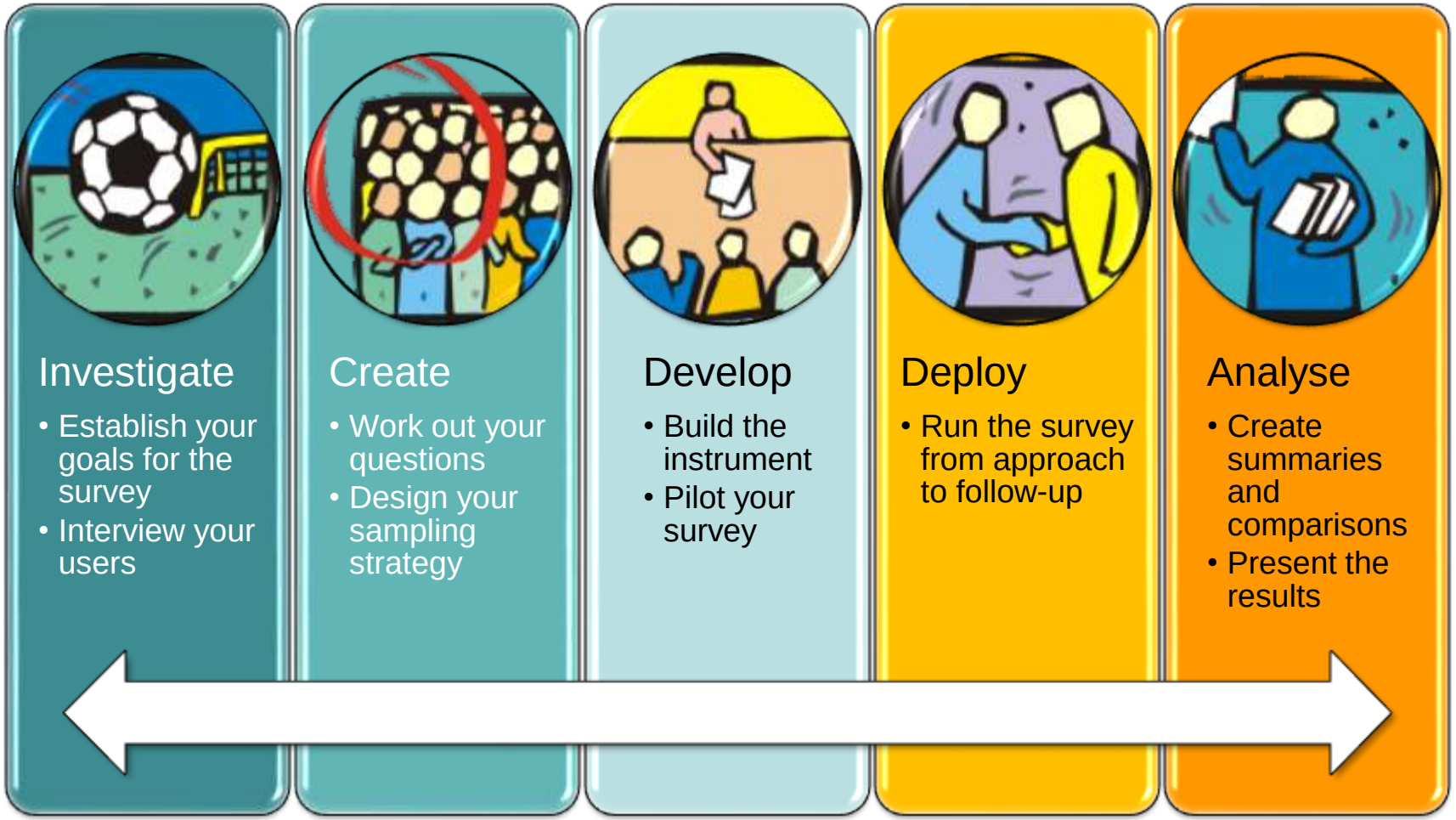


Diagram 4
An ideal survey process

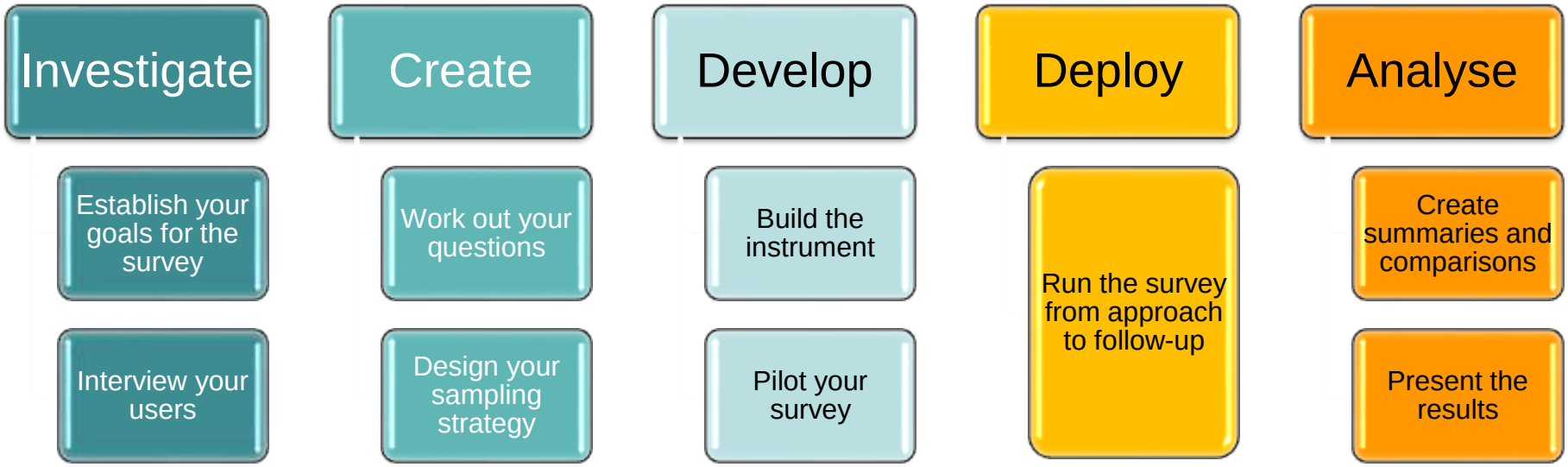
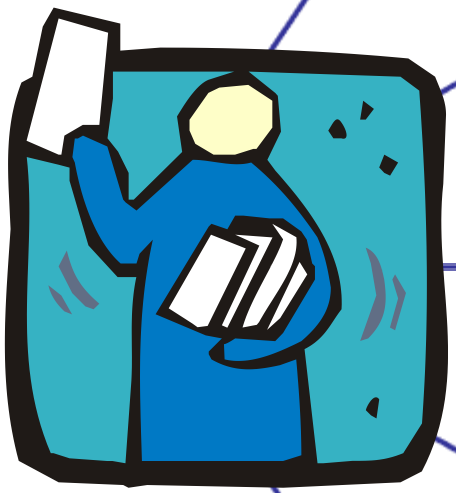
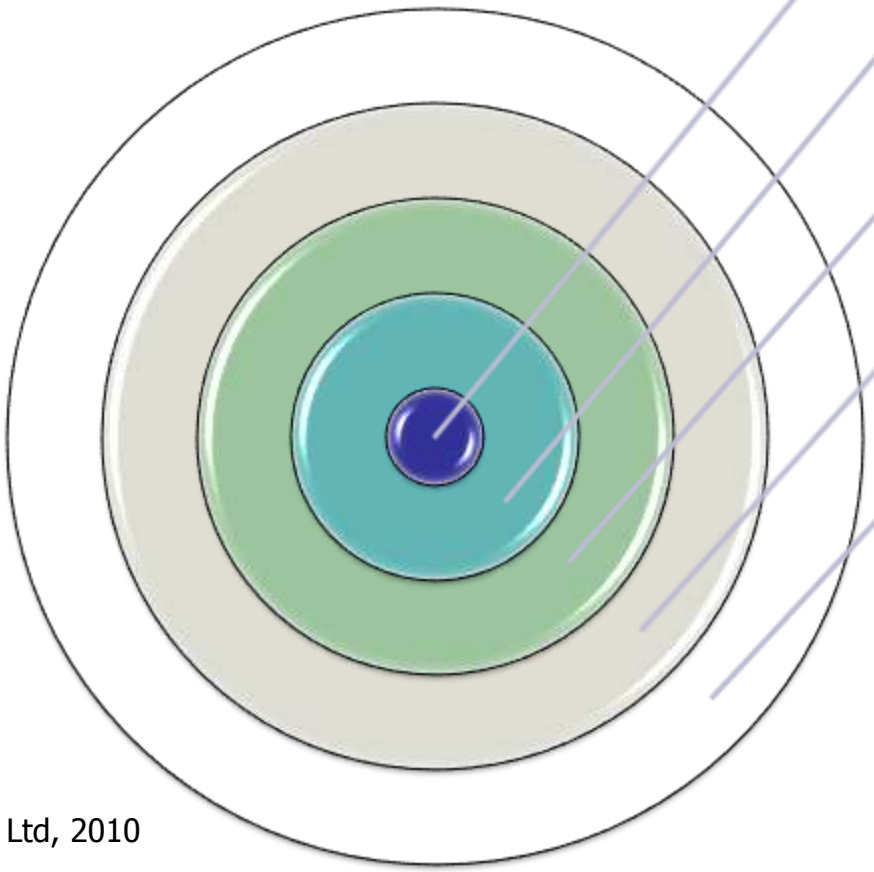


Diagram 5 An ideal survey process



- **Investigate**
  - Establish your goals for the survey
  - Interview your users
- **Create**
  - Work out your questions
  - Design your sampling strategy
- **Develop**
  - Build the instrument
  - Pilot your survey
- **Deploy**
  - Run the survey from approach to follow-up
- **Analyse**
  - Create summaries and comparisons
  - Present the results

Diagram 6
An ideal survey process



Investigate
- Establish your goals for the survey
- Interview your users

Create
- Work out your questions
- Design your sampling strategy

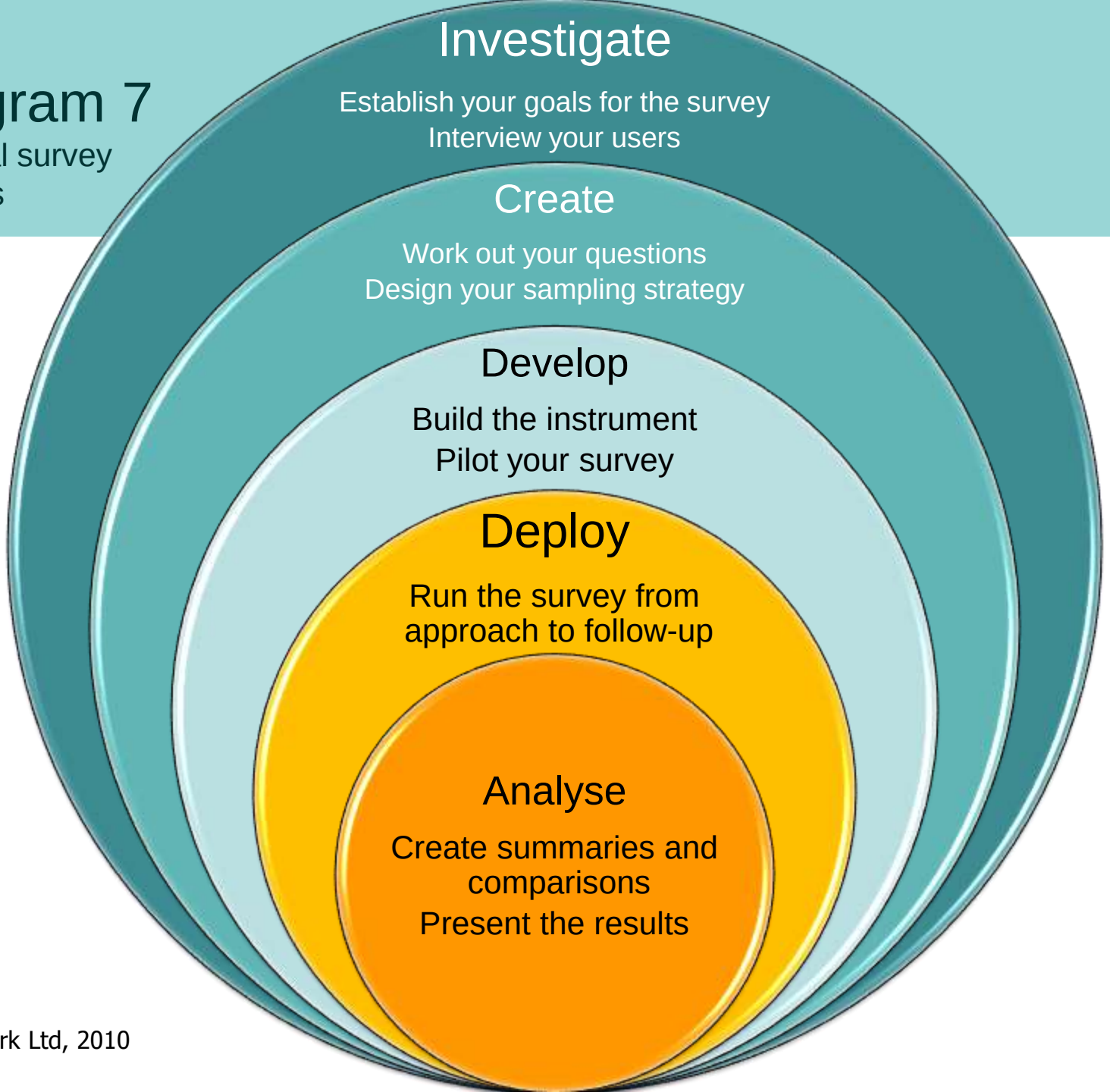
Develop
- Build the instrument
- Pilot your survey

Deploy
- Run the survey from approach to follow-up

Analyse
- Create summaries and comparisons
- Present the results

Diagram 7

An ideal survey process



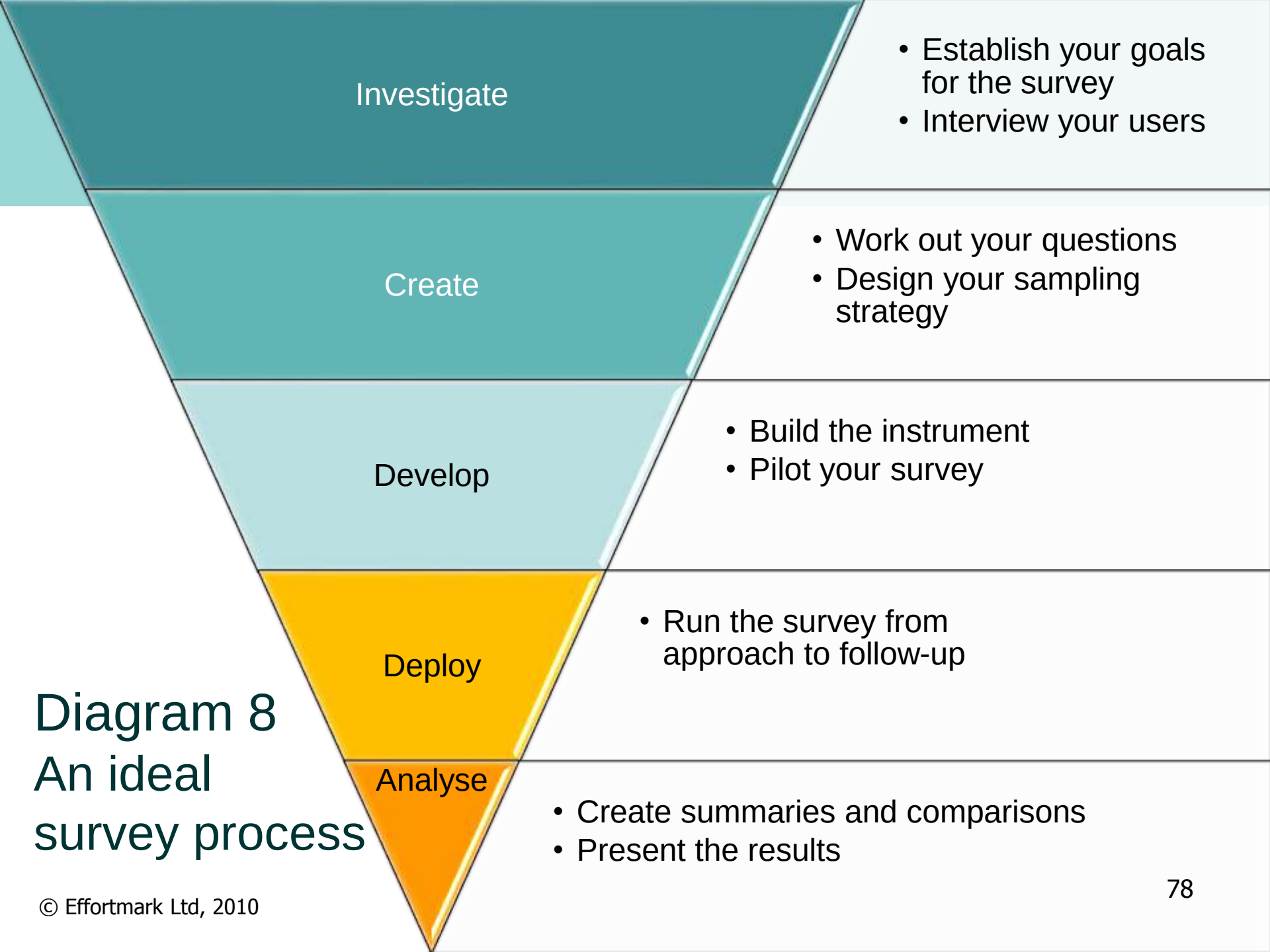
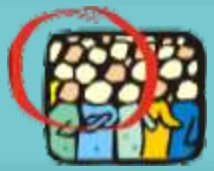


Diagram 8 An ideal survey process

Diagram 9
An ideal survey process

Investigate

- Establish your goals for the survey
- Interview your users



Create

- Work out your questions
- Design your sampling strategy

Develop

- Build the instrument
- Pilot your survey

Deploy

- Run the survey from approach to follow-up

Analyse

- Create summaries and comparisons
- Present the results

Diagram 10
An ideal survey process

Investigate

- Establish your goals for the survey
- Interview your users

Create

- Work out your questions
- Design your sampling strategy

Develop

- Build the instrument
- Pilot your survey

Deploy

- Run the survey from approach to follow-up

Analyse

- Create summaries and comparisons
- Present the results