

# Information Gatherings

Non-Interactive Methods

# Unobtrusive Methods

Less disruptive

Text analytics to analyze qualitative data

Insufficient when used alone

Multiple methods approach

Used in conjunction with interactive methods

# Major Topics

- Sampling
- Quantitative document analysis
- Qualitative document analysis
- Text analytics
- Observation
- STROBE
- Applying STROBE

# Sampling (1 of 2)

A process of systematically selecting representative elements of a population

Involves two key decisions:

- What to examine
- Which people to consider

## Sampling (2 of 2)

Sampling helps accelerate the process by gathering selected data rather than all data for the entire population

The systems analyst is spared the burden of analyzing data from the entire population

## Need for Sampling (1 of 2)

reasons  
systems  
analysts  
do  
sampling  
are to

- Contain costs
- Speed up data gathering
- Improve effectiveness
- Data gathering bias can be reduced by sampling

## Need for Sampling (2 of 2)

Too costly to

- Examine every scrap of paper
- Talk with everyone
- Read every Web page from the organization

# Sampling Effectiveness

Sampling can help improve effectiveness if information that is more accurate can be obtained

This is accomplished by talking to fewer employees but asking them questions that are more detailed

If fewer people are interviewed, the systems analyst has more time to follow up on missing or incomplete data

## Sampling Bias

Data gathering bias can be reduced by sampling

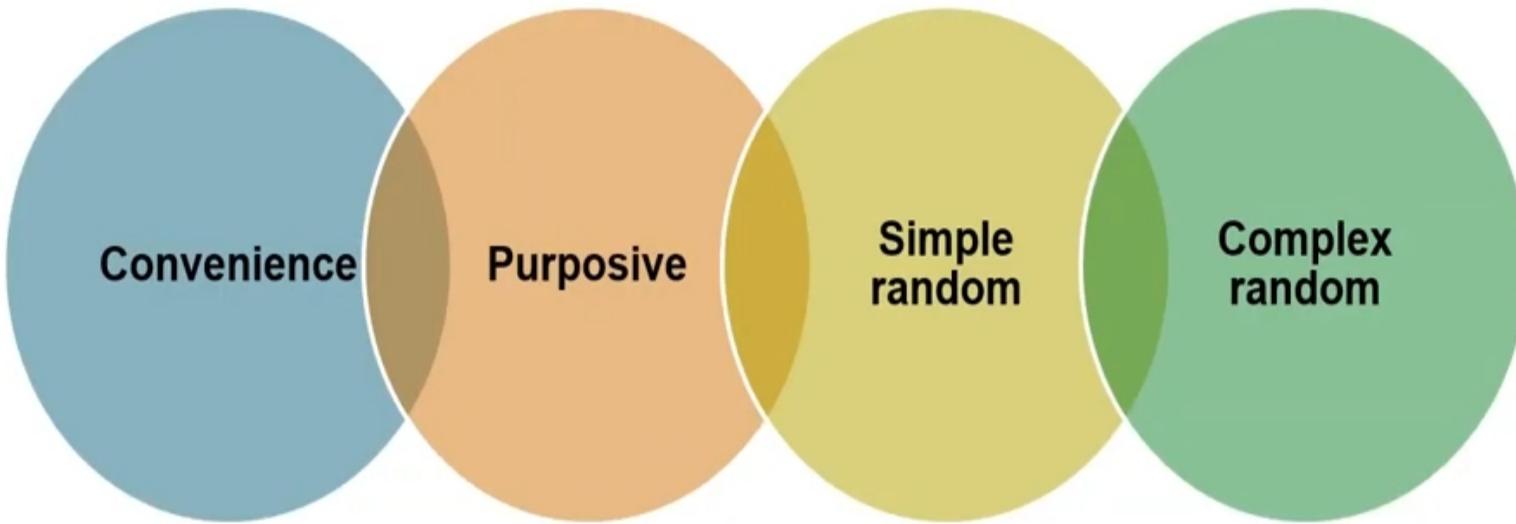
When the systems analyst asks for an opinion about a permanent feature of the installed information system, the executive interviewed may provide a biased evaluation because there is little possibility of changing it

# Sampling Design

To design a good sample, a systems analyst must follow four steps:

- Determining the data to be collected or described
- Determining the population to be sampled
- Choosing the type of sample
- Deciding on the sample size

# Four Main Types of Samples



# Convenience Samples

Convenience samples are unrestricted, nonprobability samples

This sample is the easiest to arrange

The most unreliable

# Purposive Sample

A purposive sample is based on judgment

Choose a group of individuals who appear knowledgeable and are interested in the new information system

A nonprobability sample

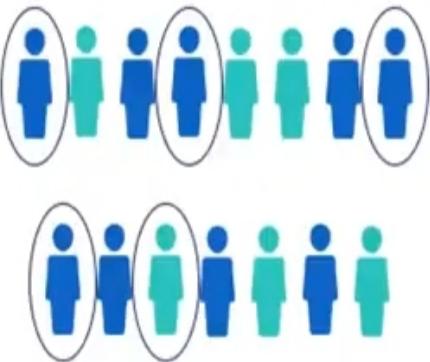
Only moderately reliable

# Complex Random Samples

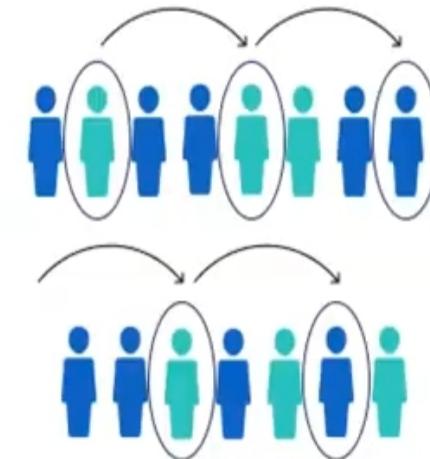
The complex random samples that are most appropriate for a systems analyst are

- Systematic sampling
- Stratified sampling
- Cluster sampling

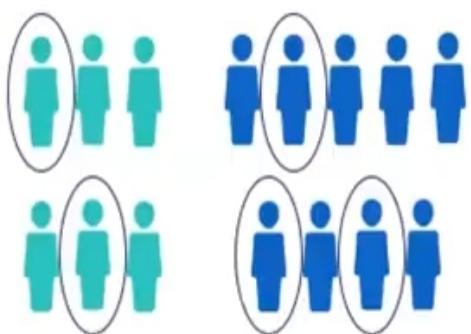
**Simple random sample**



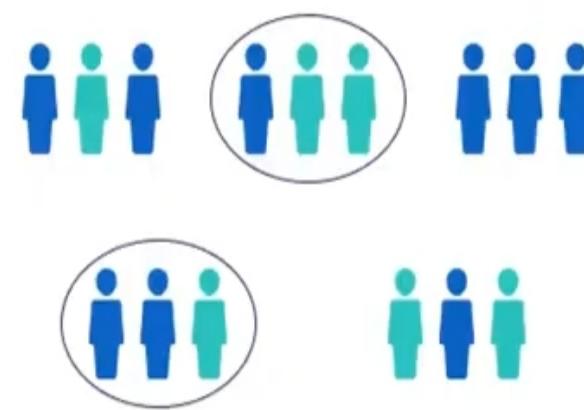
**Systematic sample**



**Stratified sample**



**Cluster sample**



## Figure 5.1 Four Main Types of Samples the Analyst Has Available

	Not Based on Probability	Based on Probability
Sample elements are selected directly without restrictions	Convenience	<u>Simple random</u>
Sample elements are selected according to specific criteria	Purposive	Complex random (systematic, stratified, and cluster)

The systems analyst should use a complex random sample if possible.

# The Sample Size Decision



Determine the attribute



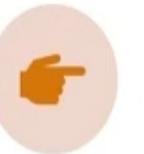
Locate the database or reports in which the attribute can be found



Examine the attribute



Make the subjective decision regarding the acceptable interval estimate



Choose the confidence level



Calculate the standard error



Determine the sample size

## Figure 5.2 A Table of Area under a Normal Curve Can Be Used to Look up a Value Once the Systems Analyst Decides on the Confidence Level

Confidence Level	Confidence Coefficient (z value)
99%	2.58
98	2.33
97	2.17
96	2.05
95	1.96
90	1.65
80	1.28
50	0.67

First decide on the confidence level...



... then look up the z value.



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## Calculate the Standard Error of the Proportion

$$\sigma_p = \frac{i}{z}$$

*i* = interval estimate

*z* = confidence coefficient found in the confidence level  
lookup table

## Determine the Sample Size

$$n = \frac{p(1-p)}{\sigma_p^2} + 1$$

$\sigma_p$  = standard error

$p$  = the proportion of the population having the attribute

## Example: A. Sembly Company

- Determine that you are looking for orders with mistakes
- Locate order forms from the past six months
- Examine order forms and conclude that  $p = 5\%$
- Subjective decision of acceptable interval  $i = \pm 0.02$
- Look up confidence coefficient z - value = 1.96
- Calculate  $\sigma_p = \frac{i}{z} = \frac{0.02}{1.96} = 0.0102$
- Determine n;  $n = 458$

# Investigation

The act of discovery and analysis of data

Hard data

Quantitative

Soft data

Qualitative



# Analyzing Quantitative Documents



Hard data

# Analyzing Quantitative Documents



# Reports Used for Decision Making

Sales  
reports

Production  
reports

Summary  
reports

## Figure 5.3 A Performance Report Showing Improvement

Week	Number of Batches Produced	Number of Batches Rejected	Percentage Rejected	Amount Away from 5% Goal
2/2	245	19	7.8	2.8
2/9	229	19	8.3	3.3
2/16	219	14	6.3	1.3
2/23	252	13	5.2	0.2
3/2	245	13	5.3	0.3
3/9	260	13	5.0	***
3/16	275	14	5.1	0.1
3/23	260	13	5.0	***
3/30	260	13	5.0	***
4/6	244	12	4.9	***
4/13	242	11	4.5	***
4/20	249	11	4.4	***
4/27	249	11	4.4	***

\*\*\* indicates met or exceeded the < 5% goal

Performance reports show goals ...

... and trends.

# Records

Records provide periodic updates of what is occurring in the business

There are several ways to inspect a record:

- Checking for errors in amounts and totals
- Looking for opportunities for improving the recording form design
- Observing the number and type of transactions
- Watching for instances in which the computer can simplify the work (calculations and other data manipulation)

## Figure 5.4 A Manually Completed Payment Record

Check for errors.

Look for opportunities for improvement in design.

Observe the number and type of transactions.

Watch for places the computer can simplify the work.

PROJ. NAME		OAK, FC		#	562	KEY SIGNATURE									
RENT POTENTIAL				1175/0	81299	DEPOSIT POTENTIAL		PRORATE				15.00 121.32			
Base Rent	Refrigerator	Furniture	A/C Util.	HMSR	T.V.	Maid	Total Rent	Secur- ity	Clean- ing	31175/0	81299	31700 Tax	Days	Daily Rate	Totals 5.20 910 30 30
855	55						910			H/Sdep	H/S rent		4	30.33 4.50	
								200	115					Deposits 31.63	340
PAYMENT RECORD: Tot. 31175/0 + 81299 + Rent = 910								TOTAL INITIAL PAYMENT REQUIRED: 1430.52							
Memo Only	Date Due	Date Paid	Receipt Number	Paid to Noon	Total Rent	Secur- ity	Clean- ing	31700 Tax	31175/0	81299	Dates	Other Amt.	Amount Paid	Balance Due	
TV 10/3 MO1	8/28	8/28	106642	9/30	1031.32	202	115	44.20	25			414.82	15	1430.52	0'
	10/1	10/1	107503	10/31	910									910	0'
	11/1	11/1	10935	11/16	485.38									485.38	0'
C1H/S9-16	11/17	11/8	11200	11/23	212.31									212.31	0'
Bill 1 MO	11/24														
Prorated															
H/S should be created toward refund deposit															
Orig. Move-in Date	8-28		d	Same		Exp.				x #	1				
BLDG. #				NAME		Kendall					1st.				

# Data Capture Forms

Collect examples of all the forms in use

Note the type of form

Document the intended distribution pattern

Compare the intended distribution pattern with who actually receives the form

## Figure 5.4 A Manually Completed Payment Record

PROJ. NAME <u>OAK, FC</u> # <u>562</u>										KEY SIGNATURE _____						
RENT POTENTIAL						DEPOSIT POTENTIAL			PRORATE							
Base Rent	Refrigerator	Furniture	A/C	Util.	HMSR	T.V.	Maid	Total Rent	Secur- ity	Clean- ing	31175/0	81299	31700 Tax	Days	Daily Rate	Totals
855		55						910						4	<del>30.33</del> 4.50	5.20
									H/S dep	H/S rent						910 30
									200	115						340
PAYMENT RECORD: Tot. 31175/0 + 81299 + Rent = 910										TOTAL INITIAL PAYMENT REQUIRED: 1430.52						
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TV 10/3 MO 1		8/28	8/28	106642	9/30	1031.52	202	115	44.20	25			414.82	15	1430.52	0'
		10/1	10/1	107503	10/31	910									910	0'
		11/1	11/1	10935	11/26	485.28									485.28	0'
C1H/S9-16		11/17	11/8	11200	11/23	212.31									212.31	0'
Bill 1 MO		11/24														
Prorated																
H/S should be created toward refund deposit																
Orig. Move-in Date		8-28		d	Same		Exp.		x #	1						
BLDG. #		NAME <u>Kendall</u>										1st.				

*Note: The original document shows handwritten calculations and annotations. The following are key observations from the annotations:*

- Check for errors.** Points to the circled "Total Rent" of 910 in the RENT POTENTIAL section.
- Look for opportunities for improvement in design.** Points to the PRORATE section.
- Observe the number and type of transactions.** Points to the Orig. Move-in Date field (8-28).
- Watch for places the computer can simplify the work.** Points to the X# field (1).

## Figure 5.5 Questions to Ask about Official and Bootleg Forms That Are Already Filled out

Farmfresh  
Reorder of Shorted Dairy Products

Date _____	Store Name _____	Store Number _____	
Item Requested	Cases	Item Requested	Cases
Milk (1/2 gals.)		Milk (quarts)	
Whole		Whole	
2%		2%	
1%		1%	
Skim		Skim	
Buttermilk		Buttermilk	
Chocolate		Chocolate	
Yogurt		Pineapple	
Plain		Dutch Apple	
Vanilla		Banana	
Peach		Mixed Fruit	
Blueberry		Raspberry	
Boysenberry		Lemon	
Strawberry			
Ice Cream		Deluxe Quarts	
Deluxe Pints		Premium Pints	
Deluxe 1/2 Gallons		Premium Quarts	
Skinny Minnies			
Requested by (employee number) _____		Total Cases Ordered _____	
Reason for Shortage _____			
Driver Number _____	Route Number _____		

Store \_\_\_\_\_ Date \_\_\_\_\_ Driver \_\_\_\_\_  
Product shorted Cases needed  
  
Dairy manager's initials \_\_\_\_\_

Official form can overwhelm people by asking for too much information.

There may be no logical order to the form.

Is the total really needed?

"Bootleg" forms arise to simplify the problem.

# Questions to Ask about Forms

Is the form filled out in its entirety?

Are there forms that are never used?

Are all copies of forms circulated to the proper people or filed appropriately?

Check on permissions and functioning form links.

Can people who must access online forms do so?

If there is a paper form that is offered as an alternative to a Web-based form, compare the completion rates for both.

Are "unofficial" forms being used on a regular basis?

# Analyzing Qualitative Documents



# Analyzing Qualitative Documents

Key or guiding images

Insiders vs. outsider's mentality

What is considered good vs. evil

Graphics, logos, and icons in common areas or web pages

A sense of humor

# Analyzing Qualitative Documents

Email messages

Memos

Signs or posters on bulletin boards

Corporate Web sites (note the interactivity of Web sites)

Manuals

Policy handbooks

## Figure 5.6 Analysis of Memos Provides Insight into the Metaphors That Guide the Organization's Thinking

### MEMO

To: All Night Call Desk Staff  
From: S. Leep, Night Manager  
Date: 2/15/2018  
Re: Get Acquainted Party Tonight

It's a pleasure to welcome two new 11-7 Call Desk staff members, Twyla Tine and Al Knight. I'm sure they'll enjoy working here. Being together in the wee hours makes us feel like one big happy family. Remember for your breaks tonight that some of the crew has brought in food. Help yourself to the spread you find in the break room, and welcome to the clan, Twyla and Al.

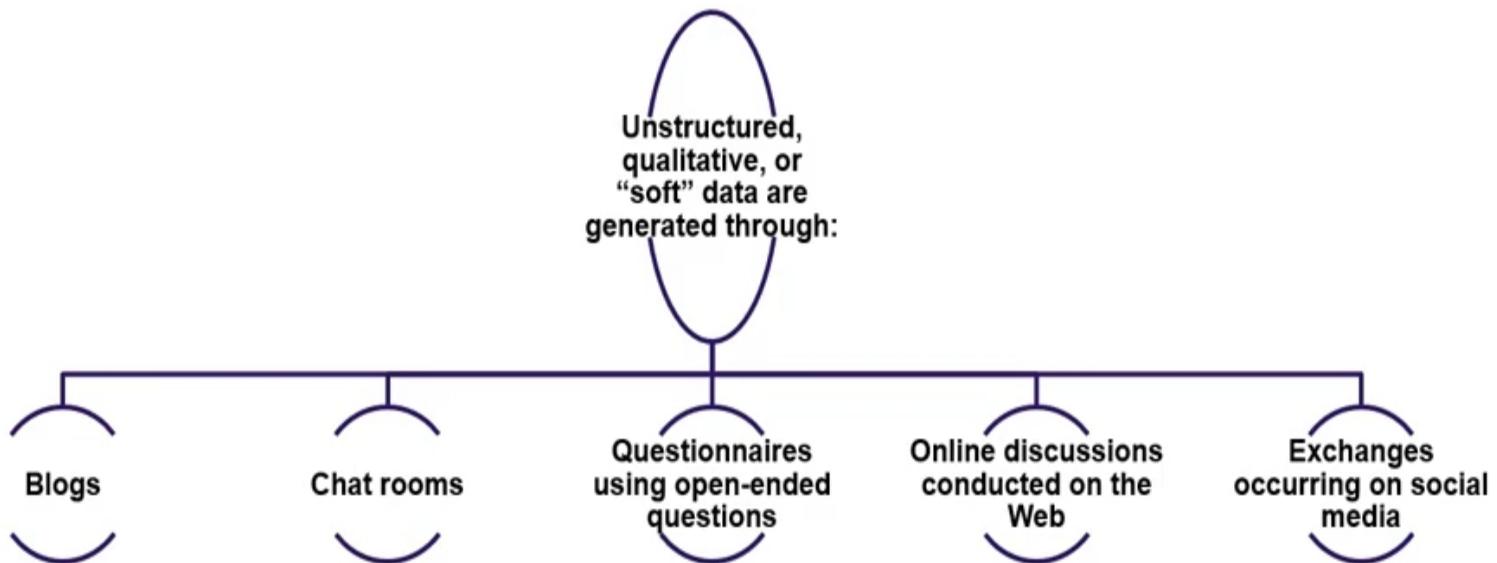
## Text Analytics (1 of 3)



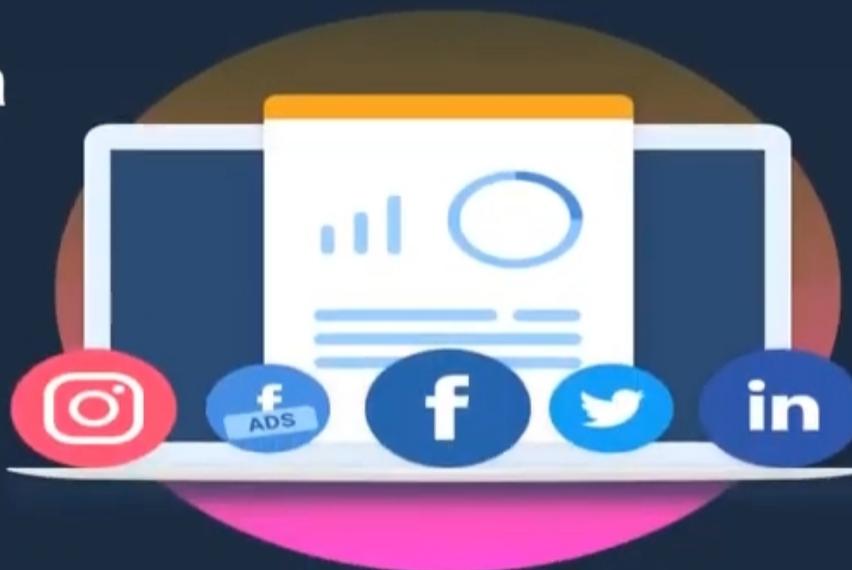
Software that can analyze unstructured qualitative data from any source including:

- Transcripts of interviews
- Written reports
- Customers' communication collected through email, wikis, blogs, chat rooms, and other social networking sites

## Text Analytics (2 of 3)



social media  
analytics

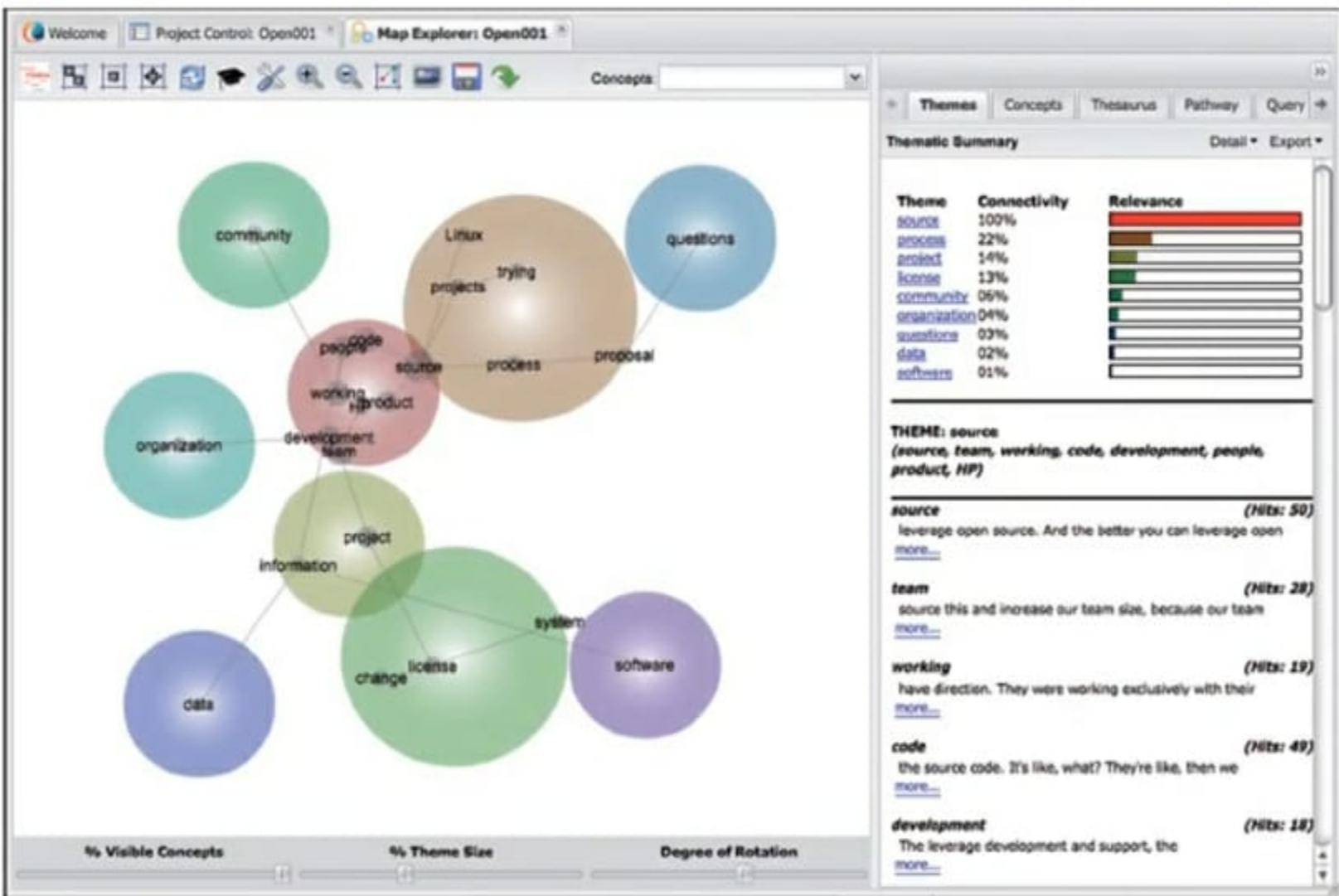


## Text Analytics Can Help

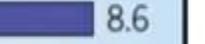
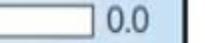
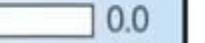
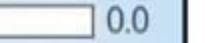
Text  
analytics  
can  
realize  
valuable  
insights  
into

- What customers are thinking about the organization, the values and actions of the company
- Customer or vendor motivations for beginning, maintaining, improving, or discontinuing a relationship

# Figure 5.7 Concept Map Showing Prominence and Relationships of Concepts



## Figure 5.8 Ranked Concepts for Categories Overview

Category: community				Category: license			
Concept	Rel Freq (%)	Strength (%)	Prominence	Concept	Rel Freq (%)	Strength (%)	Prominence
development	2	5	 4.1	project	11	4	 8.6
information	2	5	 4.1	system	5	3	 7.1
source	4	4	 2.9	source	5	2	 3.7
system	< 1	< 1	 0.0	team	< 1	< 1	 0.0
project	< 1	< 1	 0.0	organization	< 1	< 1	 0.0
team	< 1	< 1	 0.0	development	< 1	< 1	 0.0
organization	< 1	< 1	 0.0	product	< 1	< 1	 0.0
product	< 1	< 1	 0.0	information	< 1	< 1	 0.0

## Text Analytics (3 of 3)

Text analytics provide insights for an organization's members who want to have a rapid and visual yet decidedly qualitative approach to analyzing text data

An important element is to design the human activities surrounding the use of text analytics software

# Observation

Observation provides insight on what organizational members actually do

See firsthand the relationships that exist between decision makers and other organizational members

Can also reveal important clues regarding HCI concerns



## Analyst's Playscript

Involves observing the decision-makers behavior and recording their actions using a series of action verbs

### Examples:

- Talking
- Sampling
- Corresponding
- Deciding

## Figure 5.9 A Sample Page from the Analyst's Playscript

Playscript Analysis	Company: Solid Steel Shelving Analyst: L. Brackett	
<u>Decision Maker (Actor)</u>	<u>Information-Related Activity (Script)</u>	
Quality Assurance Manager	Asks shop floor supervisor for the day's production report	
Shop Floor Supervisor	Prints out daily computerized production report	
Quality Assurance Manager	Discusses recurring problems in production runs with quality assurance (QA) manager	
Quality Assurance Manager	Reads production report	
Quality Assurance Manager	Compares current report with other reports from the same week	
Quality Assurance Manager	Inputs data from daily production run into QA model on computer	
Quality Assurance Manager	Observes onscreen results of QA model	
Shop Floor Supervisor	Calls steel suppliers to discuss deviations from quality standards	
Shop Floor Supervisor	Attends meeting on new quality specifications with quality assurance manager and vice president of production	
Quality Assurance Manager	Drafts letter to inform suppliers on new quality specifications agreed on in meeting	
Vice President of Production	Sends draft to vice president via email	
Vice President of Production	Reads drafted letter	
Quality Assurance Manager	Returns corrections and comments via email	
Quality Assurance Manager	Reads corrected letter on email	
Quality Assurance Manager	Rewrites letter to reflect changes	

## **STROBE** (1 of 2)

**STRuctured OBservation of the Environment**

a technique for observing the decision-maker's physical environment

## STROBE (2 of 2)

Often it is possible to observe the particulars of the surroundings that will confirm or negate the organizational narrative

- Also called stories or dialogue
- Information that is found through interviews or questionnaires

# STROBE Elements

Office location

Desk placement

Stationary equipment

Props

External information sources

Office lighting and color

Clothing worn by decision makers

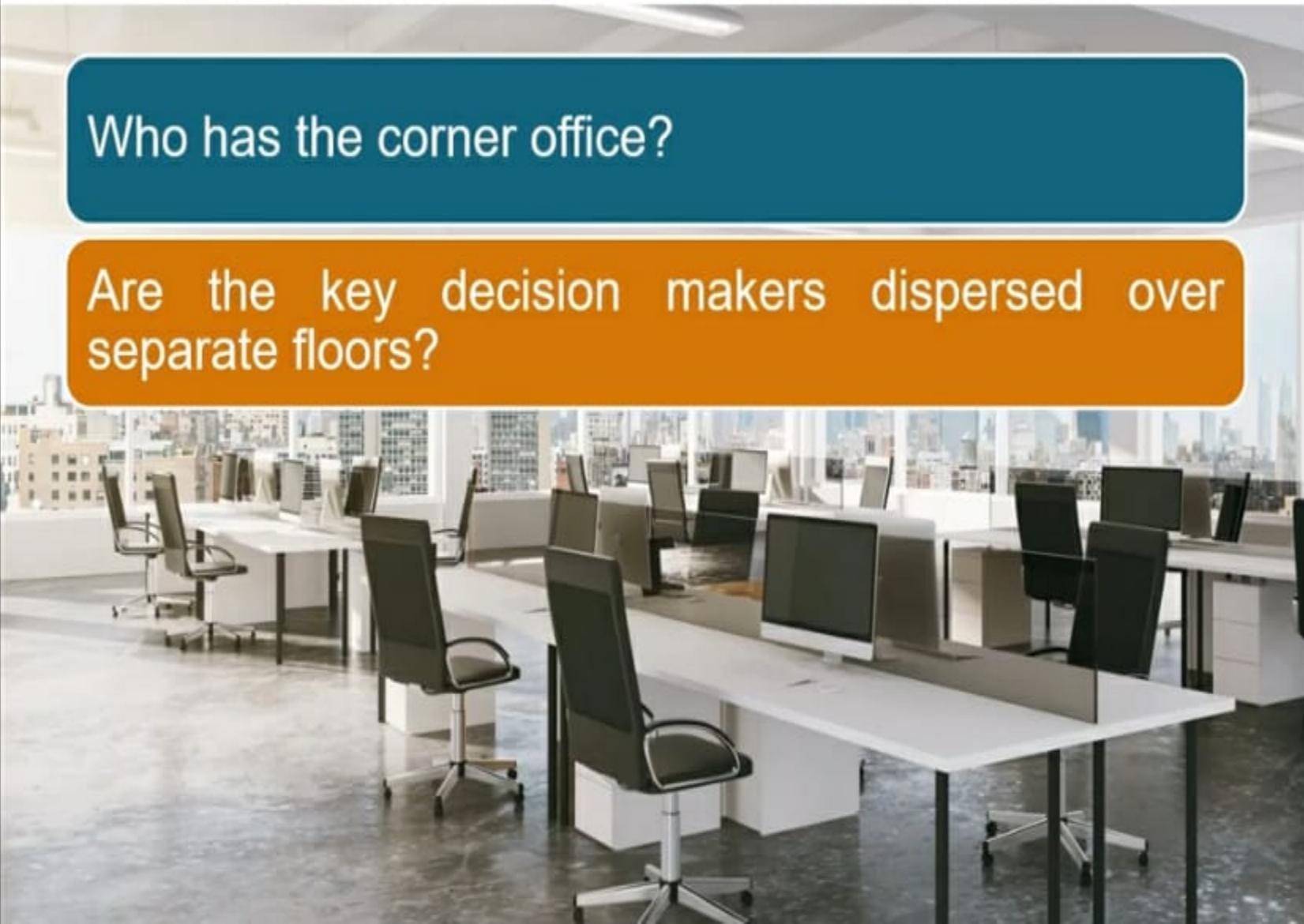
## Figure 5.10 Seven Concrete Observable Elements of STROBE

Observable Element	Questions an Analyst Might Investigate
<b>Office location</b>	Who has the corner office? Are the key decision makers dispersed over separate floors?
<b>Desk placement</b>	Does the placement of the desk encourage communication? Does the placement demonstrate power?
<b>Stationary equipment</b>	Does the decision maker prefer to gather and store information personally? Is the storage area large or small?
<b>Props</b>	Is there evidence that the decision maker uses a PC, smartphone, or tablet computer in the office
<b>External information sources</b>	Does the decision maker get much information from external sources such as trade journals or the Web?
<b>Office lighting and color</b>	Is the lighting set up to do detailed work or more appropriate for casual communication? Are the colors warm and inviting?
<b>Clothing worn by decision makers</b>	Does the decision maker show authority by wearing conservative suits? Are employees required to wear uniforms?

## Office Location

Who has the corner office?

Are the key decision makers dispersed over separate floors?



# Desk Placement

Does the placement of the desk encourage communication?

Does the placement demonstrate power?



# Stationary Office Equipment

Does the decision maker prefer to gather and store information personally?

Is the storage area large or small?



# Props

Is there evidence that the decision maker uses a PC, smart phone, or tablet computer in the office?



## External Information Sources

Does the decision maker get much information from external sources such as trade journals or the Web?



# Office Lighting and Color

Is the lighting set up to do detailed work or more appropriate for casual communication?

Are the colors warm and inviting?



# Clothing

Does the decision maker show authority by wearing conservative suits?

Are employees required to wear uniforms?



## Figure 5.11 STROBE and Decision-Maker Characteristics

Characteristics of Decision Makers	Corresponding Elements Characteristics of Decision Makers in the Physical Environment
Gathers information informally	Warm, incandescent lighting and colors
Seeks extraorganization information	Trade journals present in office
Processes data personally	PCs, or tablet computers present in office
Stores information personally	Equipment/files present in office
Exercises power in decision making	Desk placed for power
Exhibits credibility in decision making	Wears authoritative clothing
Shares information with others	Office easily accessible

## Applying STROBE

5 symbols used to evaluate how observation of the elements of **STROBE** compared with interview results are:

- A checkmark means the narrative is confirmed ✓
- An "X" means the narrative is reversed ✗
- An oval or eye-shaped symbol serves as a cue to look further
- A square means observation modifies the narrative
- A circle means narrative is supplemented by observation

## Figure 5.12 An Anecdotal List with Symbols

Anecdotal List with Symbols for Applying STROBE				
Narrative Portrayed by Organization Members	Office Location and Equipment	Office Lighting, Color, and Graphics	Clothing of the Decision Maker	
Information is readily flowing on all levels.	✗	●	●	●
Adams says, "I figure out the percentages myself."	✗	●	●	●
Vinnie says, "I like to read up on these things."	✓	●	●	●
Ed says, "The right hand doesn't always know what the left hand is doing."	○	●	●	●
Adams says, "Our company doesn't change much."	●	✓	●	●
The operations staff works all night sometimes.	●	○	●	●
Vinnie says, "We do things the way Mr. Adams wants to."	●	●	●	○
Julie says, "Stanley doesn't seem to care sometimes."	●	●	●	✓
	●	●	●	●
	●	●	●	●
	●	●	●	●
	●	●	●	●

**Key**

- ✓ Confirm the narrative
- ✗ Negate or reverse the narrative
- Cue to look further
- Modify the narrative
- Supplement the narrative

## Summary (1 of 2)

- Sampling
  - Designing a good sample
  - Types of samples
  - Sample size
- Data
  - Quantitative document analysis
  - Qualitative document analysis

## Summary (2 of 2)

- Observation
- Text analytics
- STROBE
  - STROBE elements
  - Applying STROBE

**THANK  
YOU**