LECTURE 4
Preparation and elicitation

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Purpose of the lecture

How to elicit
- data,
- information,
- assumptions,
- knowledge,
that are potentially relevant when solving a Business Analysis problem?
Problem

Top management of a large international electronics manufacturer needs better marketing intelligence from the company’s consumer electronics division.

One of the initiatives that the company’s marketing executives chose, is to improve merchandising intelligence.
Recall: How to address a BA problem? (1/3)

1. Preparation
2. Elicitation
3. Synthesis
4. Exploration
5. Evaluation
6. Decision
7. Advice
8. Supervision
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Recall: How to address a BA problem? (3/3)

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<td>2.</td>
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- Data, information, assumptions, knowledge
- Terminology, roles, positions, rules, processes
- Evaluation criteria, ranking functions
How to prepare for elicitation, and then elicit data, information, assumptions, knowledge that may be relevant to improving merchandising intelligence?
What is the purpose of knowledge elicitation?

The purpose of knowledge elicitation is to:
- gather,
- clarify,
- organize / structure,
- prioritize, and
- validate
data, information, assumptions, knowledge relevant when solving a problem.
What is knowledge elicitation?

Knowledge elicitation is a set of parallel and interrelated processes.
Gather (1/14)

Goal of this process is to gain access to data, information, assumptions, knowledge.

It is often difficult, because it can involve many problems:

- **Terminology** problems
  - Use of different terms for same entities (synonymy)
  - Use of same terms for different entities (ambiguity)

- **Scope** problems
  - Where does the problem “start” and “end”?
  - What expertise are needed to solve it?
Gather (2/14)

- **Availability** problems
  - Is the easily accessible information also relevant?
  - Is it feasible to access people holding relevant information?

- **Stability** problems
  - Does the gathered information change?
  - How often does it change?
  - Why does it change?
Gather (3/14)

- **Conflict** problems – what to do when:
  - relevant information is contradictory?
  - there are strategic issues in knowledge elicitation?

- **Indecision** problems – what to do when:
  - key decisions are delayed?
  - there is no commitment to decisions already made?
  - there is no willingness to confront bad choices?
Gather (4/14)

Knowledge elicitation methods are applied to gather data, information, assumptions, knowledge.

An incomplete list of such methods:
- Interview
- Case Study
- Protocols
- Critiquing
- Role Playing
- Simulation
- Prototyping
- Observation
- Document Analysis
Gather (5/14): Interview

Interviewing consists of asking a domain expert questions on topics related to the knowledge domain of the Business Analysis problem, including:

- If/how the expert perceives the problem
- If/how the expert currently deals with the problem
- How the expert perceives others’ efforts in dealing with the problem
- If/how to improve the current situation in relation to the problem
- What can change in the organization, in response to the problem
- What should not change in response to the problem
- What cannot change in response to the problem
- How the expert evaluates the current solution to the problem
- What the expert believes to be the causes of the problem
- Etc.
Gather (6/14): Interview

Interviews can be:

- **Structured**, when the aim is to ask same questions in the same order to different people

- **Semi-structured**, when there is a list of questions or topics, which can change depending on the answers during the interview

- **Unstructured**, when topics and questions are not necessarily prepared in advance, and can change considerably according to observed answers
Gather (7/14): Case Study

Case Study approach consists of preparing in advance and discussing already solved problems in the domain, how their solutions were designed, and which solution was chosen and why.

Case Studies can focus on understanding:
- Past problems
- Hypothetical problems
- Responses to unexpected events
- Expected future problems
Gather (8/14): Protocols

Protocol analysis consists of asking an expert to perform a task and at the same time describe what she is doing and explain her choices.

Relevant for understanding existing business processes and practices in an organization.
Gather (9/14): Critiquing

In critiquing, an existing or hypothetical solution is described to an expert, and the expert is asked to assess and critique that solution.

Relevant when evaluating alternative solutions to a problem.
Gather (10/14): Role Playing

In role playing, an expert is asked to describe how she would solve a real or hypothetical problem.
Gather (11/14): Simulation

In simulation, a model of a solution is created and run on computers. Experts are asked to evaluate the results.

The aim is to evaluate the relevance of the rules used in the simulation by evaluating the output of simulation.
Gather (12/14): Prototyping

A mock solution is made, and experts are asked to evaluate and comment on the mock solution.
Gather (13/14): Observation

In observation, the aim is to observe the expert when she is doing a task / solving a problem.

Normally, in observation, the observer does not interfere in the expert’s work.
Gather (14/14): Document Analysis

In document analysis, the aim is to extract information from documentation available about the problem and its potential solutions.

It may involve interaction with experts, in order to get their assistance when interpreting documentation.
Data, information, assumptions, knowledge

Gather

Clarify

Organize

Prioritize

Validate

Time
Clarify (1/6)

The purpose of clarification is to detect and resolve:

- synonymy
- ambiguity
- vagueness

in information acquired during elicitation.
Clarify (2/6): Synonymy

Synonymy: Use of different names to refer to the same thing.

Can be solved by defining and insisting on the use of a common terminology.
Clarify (3/6): Ambiguity

Ambiguity: Possibility to interpret the same statement in different ways.

Example: “In hospitals, the police cannot shoot suspects with guns.”

Resolve case by case, by considering alternative interpretations.
Clarify (4/6): Vagueness

Vagueness: A term is vague if the following are true:

1. The truth of an assertion which uses that term depends on the context, in which the assertion is used.

2. Applying the term creates borderline cases. In any context, there will be three sets of objects:
   1. those which clearly satisfy the vague property,
   2. those which clearly do not satisfy the vague property, and
   3. those for which we are not sure if they satisfy the vague property (these are the borderline cases).

3. When the term is used in a specific form of argument, it will result in sorites paradox.
Clarify (5/6): Vagueness

Sorites paradox

**Premise:** 1 grain of wheat does not make a heap.
- If 1 grain of wheat does not make a heap then 2 grains of wheat do not make a heap.
- If 2 grains of wheat do not make a heap then 3 grains do not.
  - ...
- If 9 999 grains of wheat do not make a heap then 10 000 do not.

**Conclusion of the argument:** 10 000 grains of wheat do not make a heap.
Clarify (6/6): Vagueness

Vagueness can be used intentionally.

Example: Diplomacy

The World Trade Organisation (WTO) was a result of the trade negotiations called the Uruguay Round (mid-1980s to 1994).

To allow protectionist policies in agriculture, a new term was introduced in the terminology of the WTO: multifunctionality.

The idea is that protectionism is justified because of the multifunctionality of agriculture: any argument that says that agriculture is necessary (because, e.g., it helps sustain agricultural tradition), is an argument for multifunctionality, and thus an argument that justifies protectionist policies.
Data, information, assumptions, knowledge

Gather
Clarify
Organize
Prioritize
Validate

Time
Organize

The purpose of organizing the elicited content is to answer the following questions, on which elicited content:

- is data, information, assumptions, or knowledge?
- is about evaluation criteria, and ranking rules / functions?
- can be used to orient future elicitation?
- can be used to define precisely the problem?
- can be used to define alternative solutions?
Data, information, assumptions, knowledge

Gather

Clarify

Organize

Prioritize

Validate

Time
Prioritize

The purpose of prioritization is to identify key topics for the next iteration in elicitation.
Data, information, assumptions, knowledge

Gather

Clarify

Organize

Prioritize

Validate

Time
Validate

The purpose of validation is to determine if conclusions drawn from the elicited data, information, assumptions, and knowledge are correct.

Validation happens through additional interaction with individuals who participated in elicitation.
Another perspective on knowledge elicitation, from the Federal Bureau of Investigations (FBI) (1/3)

Elicitation:

- The strategic use of conversation to extract information from people without giving them the feeling they are being interrogated.

- It is a conversation with a specific purpose: collect information that is not readily available and do so without raising suspicion that specific facts are being sought.

- It is usually non-threatening, easy to disguise, deniable, and effective. The conversation can be in person, over the phone, or in writing.

Source: FBI / Counterintelligence / Elicitation Techniques
Another perspective on knowledge elicitation, from the Federal Bureau of Investigations (FBI) (2/3)

Why elicitation works?

- A desire to be polite and helpful, even to strangers or new acquaintances
- A desire to appear well informed, especially about our profession
- A desire to feel appreciated and believe we are contributing to something important
- A tendency to expand on a topic when given praise or encouragement; to show off
- A tendency to gossip
- A tendency to correct others
- A tendency to underestimate the value of the information being sought or given, especially if we are unfamiliar with how else that information could be used
- A tendency to believe others are honest; a disinclination to be suspicious of others
- A tendency to answer truthfully when asked an “honest” question
- A desire to convert someone to our opinion

Source: FBI / Counterintelligence / Elicitation Techniques
Another perspective on knowledge elicitation,
from the Federal Bureau of Investigations (FBI) (3/3)

Examples of elicitation techniques:

- Assumed Knowledge: Pretend to have knowledge or associations in common with a person. “According to the computer network guys I used to work with…”
- Feigned Ignorance: Pretend to be ignorant of a topic in order to exploit the person’s tendency to educate. “I’m new to this field and could use all the help I can get.” “How does this thing work?”
- Flattery: Use praise to coax a person into providing information. “I bet you were the key person in designing this new product.”
- Good Listener: Exploit the instinct to complain or brag, by listening patiently and validating the person’s feelings (whether positive or negative).

Source: FBI / Counterintelligence / Elicitation Techniques
Data, information, assumptions, knowledge

Gather

Clarify

Organize

Prioritize

Validate

Time
EXAMPLE 1

Problem: How would you do elicitation here?
EXAMPLE 2
Problem: How would you do elicitation here?
EXAMPLE 3

Problem: What are optimal positions of products in a store?

Question: How would you do elicitation for this problem?
EXAMPLE 4

Problem: How to recommend cars to buyers?
Question: How would you do elicitation for this problem?

Artwork: Jeff Koons. BMW Art Car. 2010.
EXAMPLE 5

**Problem:** How to increase sales of artworks using social media?

**Question:** How would you do elicitation for this problem?

EXAMPLE 6

**Problem**: How to continuously improve manufacturing processes at an airplane manufacturer?

**Question**: How would you do elicitation for this problem?
Mandatory readings for the next lecture

Optional readings for the next lecture
