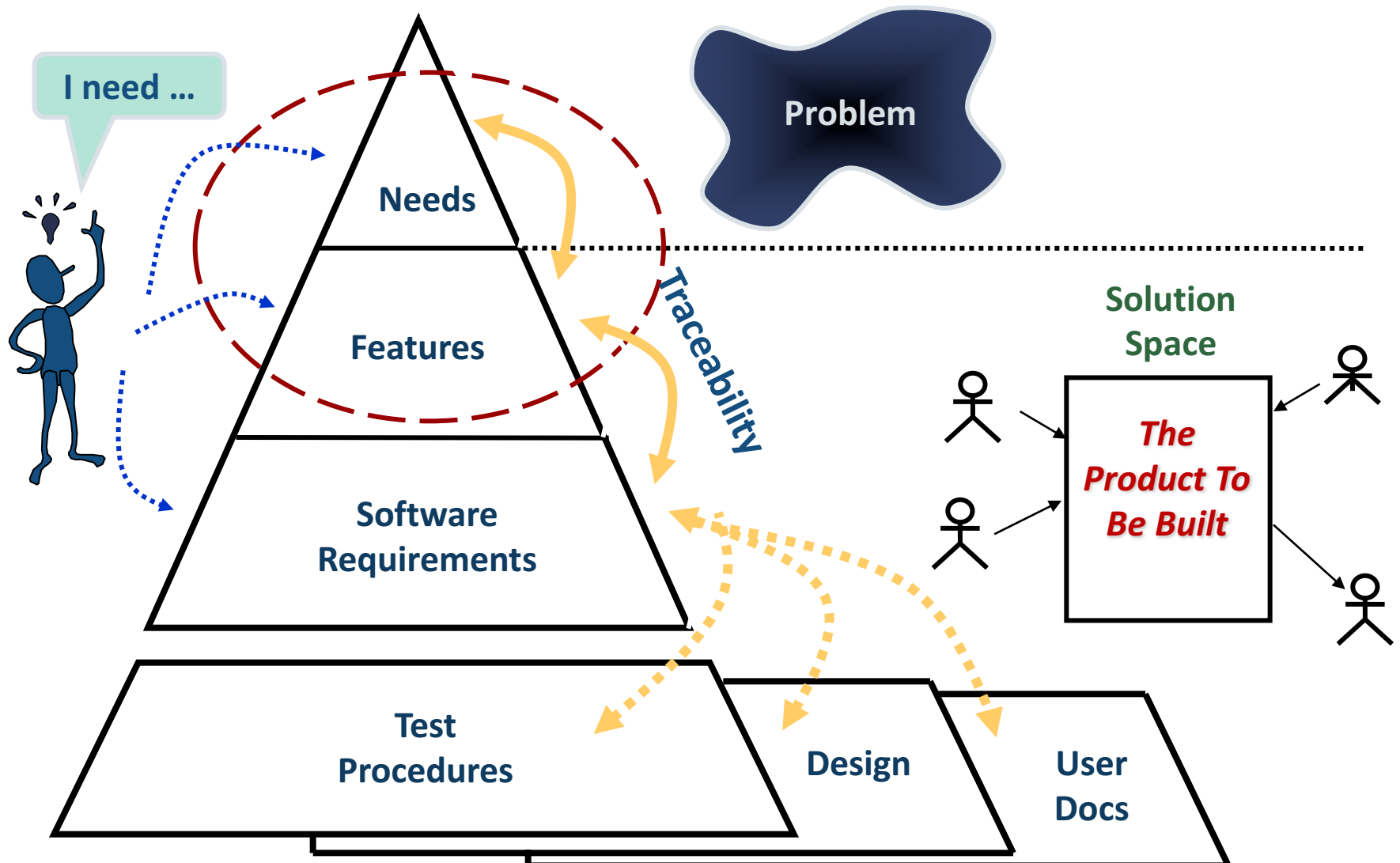


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Software Requirement Engineering

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Understanding Stakeholder Needs



Needs

- ❑ What to build? What the system will do? What does stakeholder need?
- ❑ Development team requires information to make better decisions in the definition and implementation of the system
- ❑ A good understanding of stakeholders' need by the development team will result in a better system

❑ Needs

- ❑ A reflection of the business, personal, or operational problem (or opportunity) that must be addressed in order to justify consideration, purchase, or use of a new system
- ❑ Remember! Often, these user needs will be vague and ambiguous

Features

- ❑ Stakeholders typically describe their needs at abstract level such as "I need a new GUI-based order entry screen"
- ❑ These are high-level expressions of desired system behavior – the **features**
- ❑ Feature
 - ❑ A service the system provides to fulfill one or more stakeholder needs
- ❑ Development team must **understand the need behind the feature** otherwise there is risk that feature provided in the system does not solve the real need for any reason.
- ❑ Focus of understanding user needs is on eliciting and organizing the needs and features of the proposed system.

Features Attributes

- ❑ Feature attributes provide additional information about the feature.
- ❑ Attributes are used to relate the feature or requirements data to other types of project information.
- ❑ We can use attributes
 - ❑ to track (name or unique identifier, state, history data, allocated from, traced-to, and so on)
 - ❑ to prioritize (priority field), and
 - ❑ to manage (status) the features proposed for implementation.
- ❑ Attributes **help us manage the complexity of the feature and requirements data and to manage the relationships**, such as dependencies, among the various types of system requirements

Features Attributes

☐ Status

- ☐ Tracks progress during definition of the project baseline and subsequent development
- ☐ Example: Proposed, Approved, Incorporated status states

☐ Priority/Benefit

- ☐ Ranking by relative priority or benefit to the end user opens a **dialogue** between stakeholders and members of the development team. Used in managing scope and determining priority.
- ☐ Example: Critical, Important, Useful

Requirements Elicitation Process

□ Elicitation refers to gathering the requirements of the system from different stakeholders. Boundaries, identification of stakeholders, goals and tasks performed are discovered in this phase (*Nuseibeh and Easterbrook, 2000*).

What Problems Might Be Encountered?

- ☐ Stakeholders know what they want but may not be able to articulate it.
- ☐ Stakeholders may not know what they want.
- ☐ Stakeholders think they know what they want until you give them what they said they wanted.
- ☐ Analysts think they understand user problems better than users.
- ☐ Everybody believes everybody else is politically motivated.

Requirements Challenges

- ❑ The “Yes, But” syndrome stems from users’ inability to experience software as they might a physical device.
- ❑ “Undiscovered Ruins”: the more you find, the more you realize still remain.
- ❑ The “User versus Developer” syndrome reflects the profound differences, making communication difficult.
- ❑ “The Sins of your Predecessors” syndrome is where customers and developers do not trust each other based on previous interactions, so customers want everything and developers commit to nothing.

Elicitation Techniques

☐ Interviewing and questionnaires

☐ Requirements workshops

☐ Storyboards

☐ Use cases

☐ Role playing

☐ Prototyping

☐ Wireframes & Moqups

Interviews

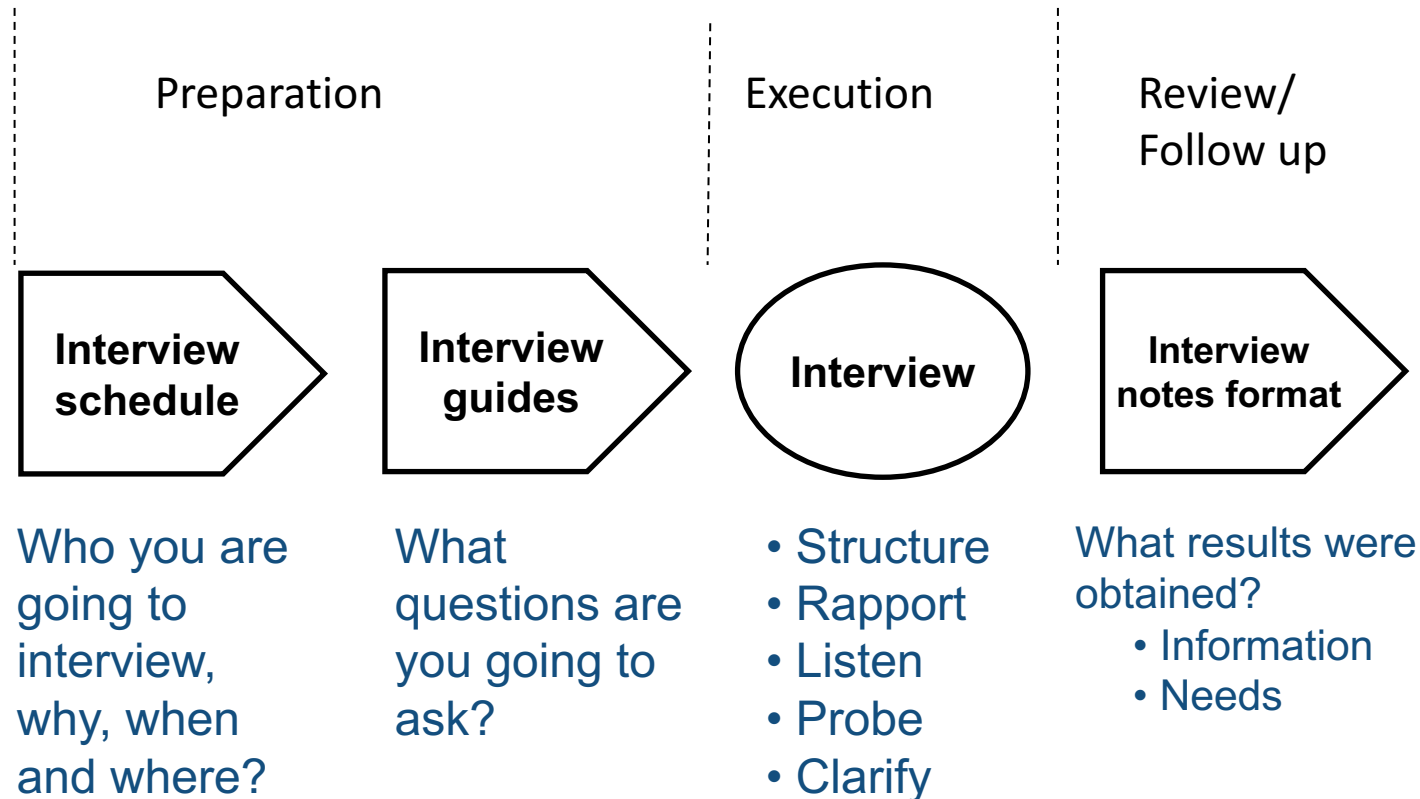
- ❑ A direct technique that can be used in both problem analysis and requirements elicitation
- ❑ Designed to gain an understanding of real problems and potential solutions from the perspectives of the users, customers, and other stakeholders



Five Basic Steps

- ☐ **Selecting Interviewees**
- ☐ **Designing the Interview Guide**
- ☐ **Preparing for the Interview**
- ☐ **Conducting the Interview**
- ☐ **Post-Interview Follow-up**

The Interview Process



Preparing the interview schedule

☐ Identify what

- ☐ the objectives of the interviews are
- ☐ information you need to find out
- ☐ areas of the business you need to obtain information from.

☐ Identify who needs to be interviewed to obtain this information.

☐ Create an interview schedule, allowing time to review and record notes between interviews.

☐ Book the interviews and record them in the schedule.

Selecting Interviewees

- ☐ Based on information needs
- ☐ Best to get different perspectives
 - ☐ Executives
 - ☐ Managers
 - ☐ Users
 - ☐ Ideally, all key stakeholders
- ☐ Keep organizational politics in mind

The Interview Schedule

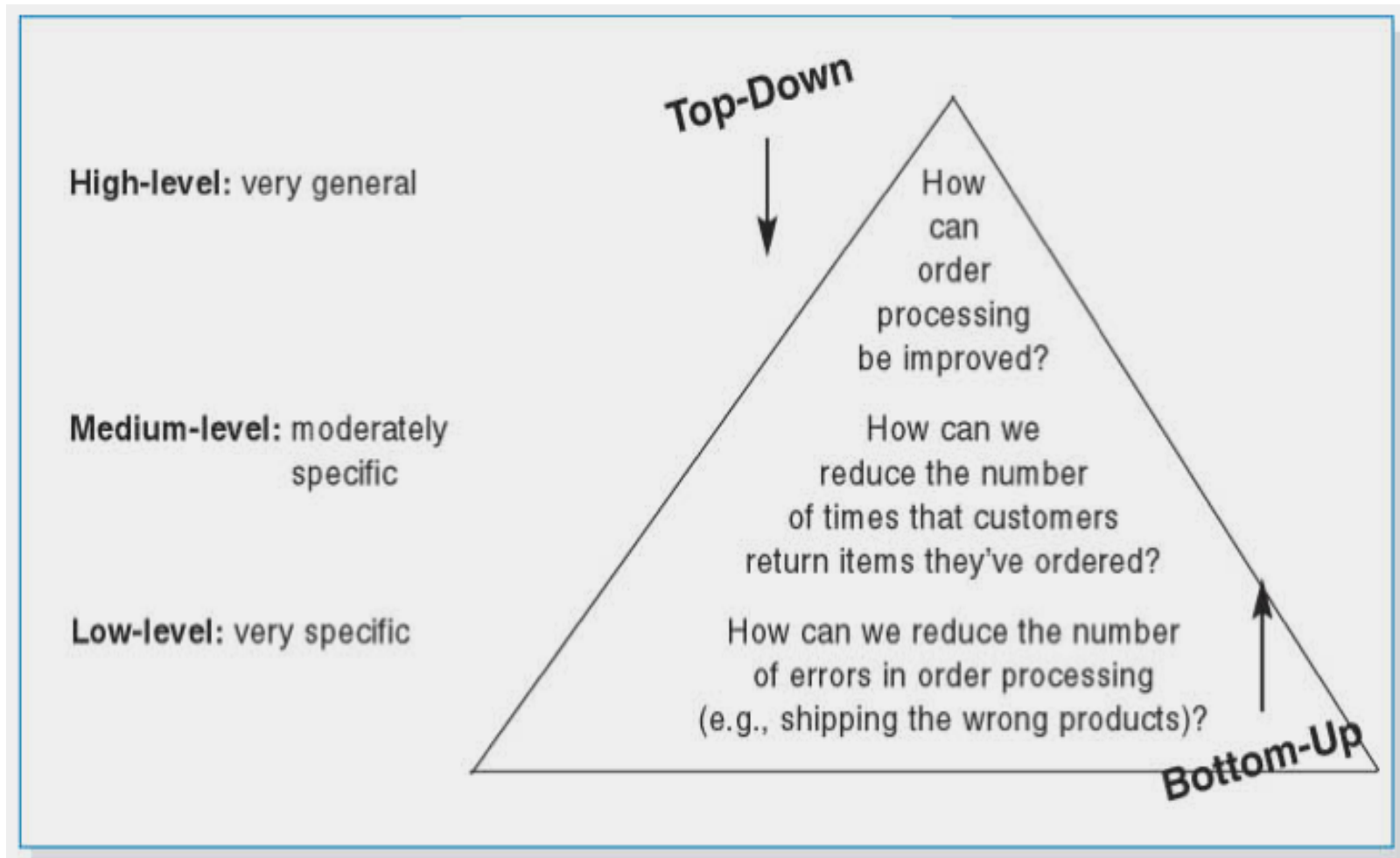
Name	Position	Rationale	Date
John Smith	R&D Manager	To understand R&D strategy and get future R&D expenditures	25/4
Roy Wilkinson	Head of metalurgical research	To get facts on competitor Xs latest development. In particular: <ul style="list-style-type: none">– Potential customers– Our position	27/4
Bob Johnson	Lab assistant		

An interview schedule is helpful, to track who is going to be interviewed, when and why.

Preparing the interview guide

- ☐ Determine the **objectives** of the interview.
- ☐ Plan the **structure** of the interview.
- ☐ Prepare interview **questions**.
 - ☐ Questioning strategy
 - ☐ Types of questions
- ☐ Prepare **additional notes** if they assist. For example having an organisation chart helps in clarifying roles and responsibilities.
- ☐ The interview guide enables standardisation of interviews for effective comparison and summarisation

Top-Down and Bottom-up Questioning Strategies



Three Types of Questions

Types of Questions	Examples
Closed-Ended Questions	<ul style="list-style-type: none">• How many telephone orders are received per day?• How do customers place orders?• What information is missing from the monthly sales report?
Open-Ended Questions	<ul style="list-style-type: none">• What do you think about the way invoices are currently processed?• What are some of the problems you face on a daily basis?• What are some of the improvements you would like to see in the way invoices are processed?
Probing Questions	<ul style="list-style-type: none">• Why?• Can you give me an example?• Can you explain that in a bit more detail?

Preparing for the Interview

☐ Prepare general interview plan

- ☐ List of question

- ☐ Anticipated answers and follow-ups

☐ Review areas to be covered

☐ Set priorities in case of time shortage

☐ Prepare the interviewee

- ☐ Schedule (confirm place/time)

- ☐ Inform of reason for interview

- ☐ Inform of areas of discussion

- ☐ Encourage interviewee to bring reference materials

Avoiding Biasness

- ❑ We do so by **asking questions** about the nature of the user's problem **without any context for a potential solution.**
- ❑ We ask "context-free" type questions
 - ❑ Who is the customer?
 - ❑ Who is the user?
 - ❑ What is the problem?
 - ❑ don't ask directly
 - ❑ Ask about difficulties/hurdles in performing the task
 - ❑ What is the reason for wanting to solve this problem?
 - ❑ How do you solve the problem now?

Part I: Establishing Customer or User Profile

Name:

Company

Industry:

Job Title:

(The above information can typically be filled in in advance.)

What are your key responsibilities?

What outputs do you produce?

For whom?

How is success measured?

Which problems interfere with your success?

What, if any, trends make your job easier or more difficult?

Part II: Assessing the Problem

For which “(application type)” problems do you lack good solutions?

What are they? *(Hint: Keep asking, “Anything else?”)*

For each problem, ask:

- Why does this problem exist?
- How do you solve it now?
- How would you like to solve it?

Part III: Understanding the User Environment

Who are the users?

What is their educational background?

What is their computer background?

Are users experienced with this type of application?

Which platforms are in use?

What are your plans for future platforms?

Are additional applications in use that are relevant to this application? If so, let’s talk about them.

What are your expectations for usability of the product?

What are your expectations for training time?

What kinds of user help (for example, hard copy and online documentation) do you need?

Part IV: Recap for Understanding

You have told me:

(List customer-described problems in your own words.)

-
-
-

Does this adequately represent the problems you are having with your existing solution?

What, if any, other problems are you experiencing?

Part V: Analyst’s Inputs on Customer’s Problem

(validate or invalidate assumptions)

(If not addressed) Which, if any, problems are associated with: *(List any needs or additional problems you think should concern the customer or user.)*

-
-
-

For each suggested problem ask,

- Is this a real problem?
- What are the reasons for this problem?
- How do you currently solve the problem?
- How would you like to solve the problem?
- How would you rank solving these problems in comparison to others you’ve mentioned?

Part VI: Assessing Your Solution (if applicable)

(Summarize the key capabilities of your proposed solution.)

What if you could

-
-

How would you rank the importance of these?

Part VII: Assessing the Opportunity

Who in your organization needs this application?

How many of these types of users would use the application?

How would you value a successful solution?

Part VIII: Assessing Reliability, Performance, and Support Needs

What are your expectations for reliability?

What are your expectations for performance?

Will you support the product, or will others support it?

Do you have special needs for support?

What about maintenance and service access?

What are the security requirements?

What are the installation and configuration requirements?

Are there special licensing requirements?

How will the software be distributed?

Are there labeling and packaging requirements?

Part IX: Other Requirements

Are there any legal, regulatory, or environmental requirements or other standards that must be supported?

Can you think of any other requirements we should know about?

Part X: Wrapup

Are there any other questions I should be asking you?

If I need to ask follow-up questions, may I give you a call? Would you be willing to participate in a requirements review?

Part XI: Analyst's Summary

After the interview, and while the data is still fresh in your mind, summarize the three highest-priority needs or problems identified by this user/customer.

- 1.
- 2.
- 3.

Conducting The Interview

- ☐ Gather facts, opinions and speculations
- ☐ Avoid biasness when phrasing questions, e.g. phrasing in ways that imply a wrong or right answer
- ☐ Never take sides on an issue
- ☐ Tape record with individual and organizational permission
- ☐ Assume tape recording will not work, which means you must simultaneously
 - ☐ Follow the interview guide, and
 - ☐ Listen very carefully to what is being said, and
 - ☐ Observe body language and emotions, and
 - ☐ Separate facts from opinions, and
 - ☐ Take notes, and
 - ☐ Plan the next question/flow of the interview

Conducting The Interview Tactical Tips

☐ **Appear professional and unbiased**

- ☐ Don't worry, be happy
- ☐ Pay attention
- ☐ Be concise and honest

☐ **Record all information**

- ☐ Check on organizational policy regarding tape recording
- ☐ Be sure you understand all issues and terms
- ☐ Confirm major points identified with interviewee
- ☐ Give interviewee time to ask questions
- ☐ Be sure to thank the interviewee
- ☐ End on time
- ☐ And, don't ask unnecessary questions!

Post-Interview Follow-Up

- ☐ **Prepare interview notes**

- ☐ Type up notes within 24 hours, preferably immediately after the interview is over

- ☐ **Prepare interview report**

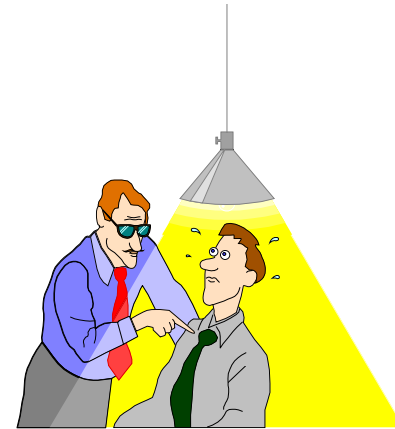
- ☐ **Have interviewee review and confirm interview report**

- ☐ **Look for gaps and new questions**

Poor interviewing behaviour

Examples:

- ✗ Did not make an appointment
- ✗ Arrived late
- ✗ Was rude
- ✗ Exhibited one upmanship
- ✗ Did not explain the purpose of the interview
- ✗ Did not explain the scope of interview
- ✗ Used jargon
- ✗ Became confrontational
- ✗ Was inconsiderate
- ✗ Talked down to the interviewee
- ✗ Abruptly ended the interview
- ✗ Did not explain what happens next



Do not

- ✗ Arrive without warning
- ✗ Forget interviewee's name or role
- ✗ Criticise
- ✗ Interrupt
- ✗ Be impatient
- ✗ Use rough or harsh language
- ✗ Fidget, lounge or appear bored
- ✗ Go over time without agreement from interviewee
- ✗ Fail to thank the interviewee for their time

Do

- ✓ **Create rapport**
- ✓ **Make notes**
- ✓ **Be sincere**
- ✓ **Be objective**
- ✓ **Be courteous**
- ✓ **Verify your findings**
- ✓ **Separate fact from fiction**
- ✓ **Pitch the interview at the right level**
- ✓ **Keep within the scope of the interview**
- ✓ **Establish the option to ask follow up questions**
- ✓ **Wrap up the interview and thank the interviewee for their time.**