



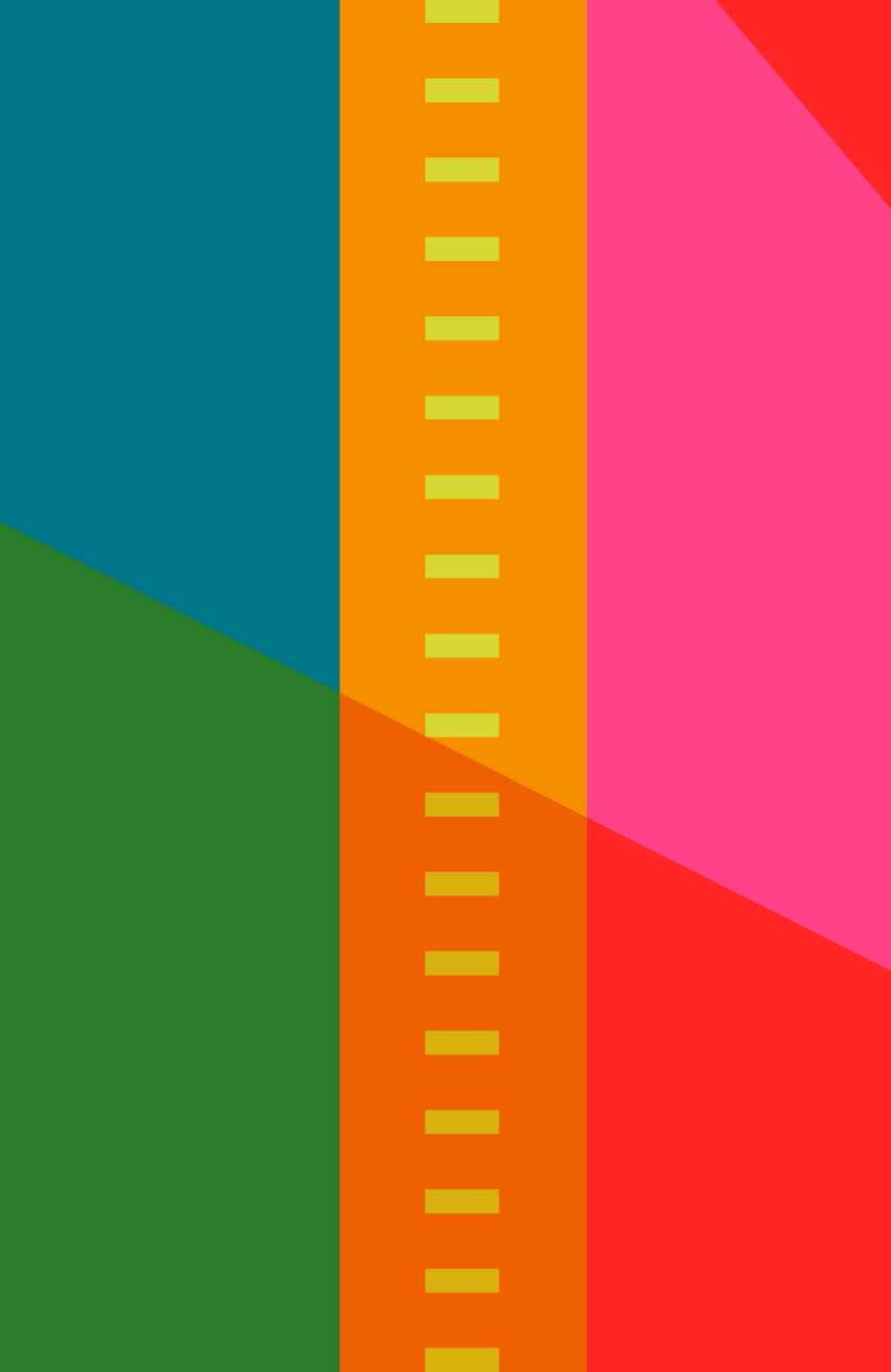
CO1605

Systems Analysis and Database Design

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Learning Outcomes

Students will be able to:

- Identify various techniques for investigating systems and businesses
- Identify which technique to use in a given situation
- Understand how requirements can be derived from the information

Determining Requirements

Why Investigate Systems?

- To collect information about the current system
- To find the problems associated with the current system
- To build a picture of the required system
- To identify the critical factors affecting the business objectives.

Ask... What, who, why, where, how



Requirements: A Recap

Functional Requirements: describes **What** the system must do (the easy ones)

Non-Functional Requirements: these are typically constraints - **How** the system will do it, or how the system will be (the difficult ones) ...

User stories: A requirement written from a user's perspective

As a... I need to... so that...



Functional Requirements

The system must...

- Capture the details of a sale
- Produce a sales receipt
- Produce a report on items that are low in stock
- Allow a customer to be added to the mailing list

User stories:

- As a sales manager I need the details of a sale to be captured so that I can see sales trends
- As a customer I need to receive a sales receipt so that I can return items
- As a stock keeper I need a report on items that are low in stock so I can order in new stock and not run out
- As a customer I want to be added to a mailing list so I can receive information about promotions and discounts

Non- Functional Requirements

- The system will support 3000 transactions per hour
- A user will need no more than 3 clicks to access...
- The system will allow 100 users concurrent access
- It will take no more than 1 second to display...
- There will be at least 22-hours availability per day
- Records will be kept for 7 years (or whatever the legislation regulates)
- The interface will use the house style for forms and reports
- Only the Stock keeper can update the stock record

Availability
Usability
Maintenance
Security
Reliability
Performance
Portability
Capacity
Scalability
Etc.

Waterfall

Requirements

Design

Development

Delivery

Maintenance

VS

Agile

Delivery

Development

Requirements

Design

Maintenance

Waterfall

Linear and Sequential development:

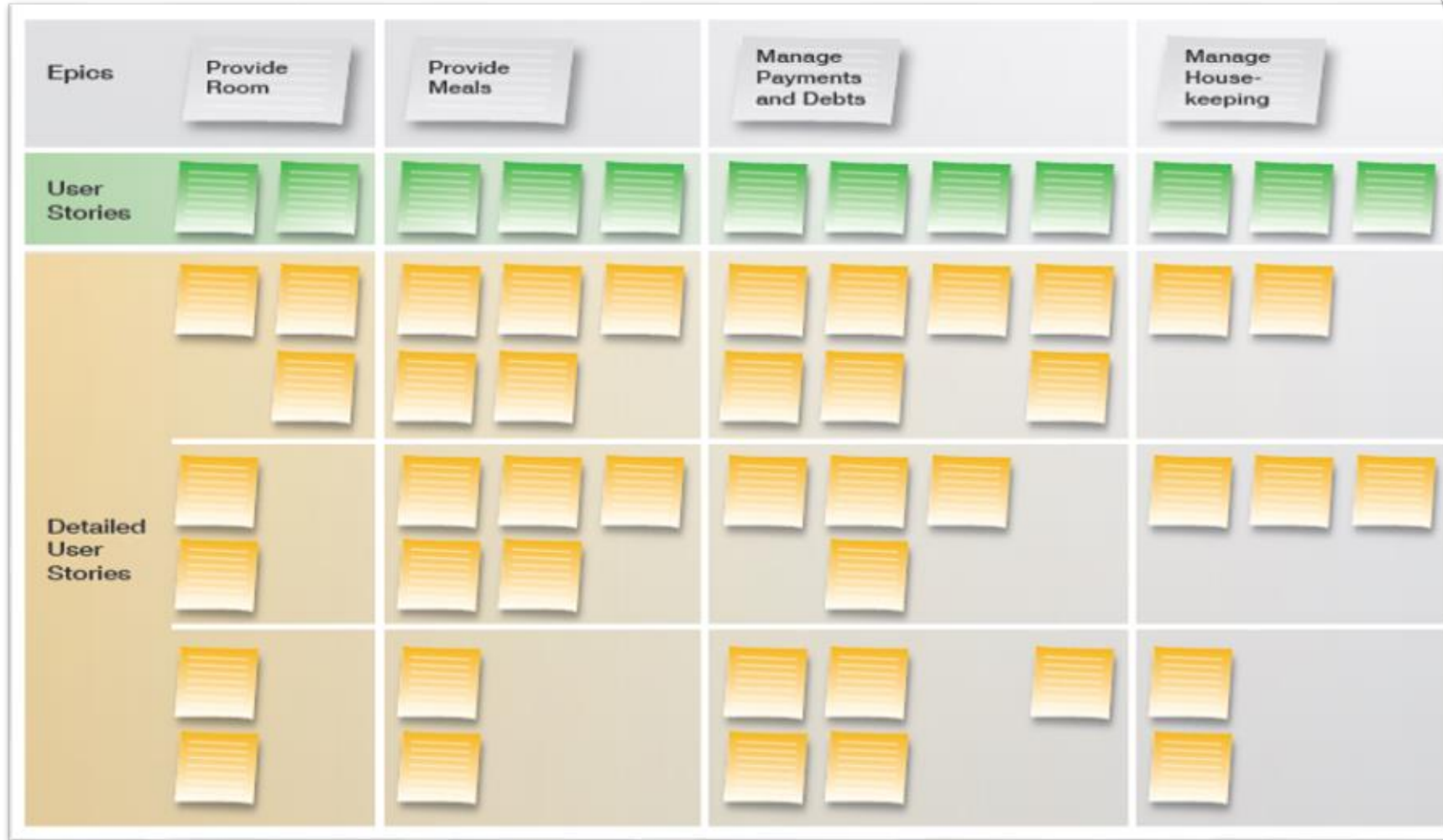
- Clearly defined phases
- Requirements gathered at the start of the project
- Users are usually not involved throughout the development
- More focus on the documentation of the requirements
- No room for changing requirements

Agile

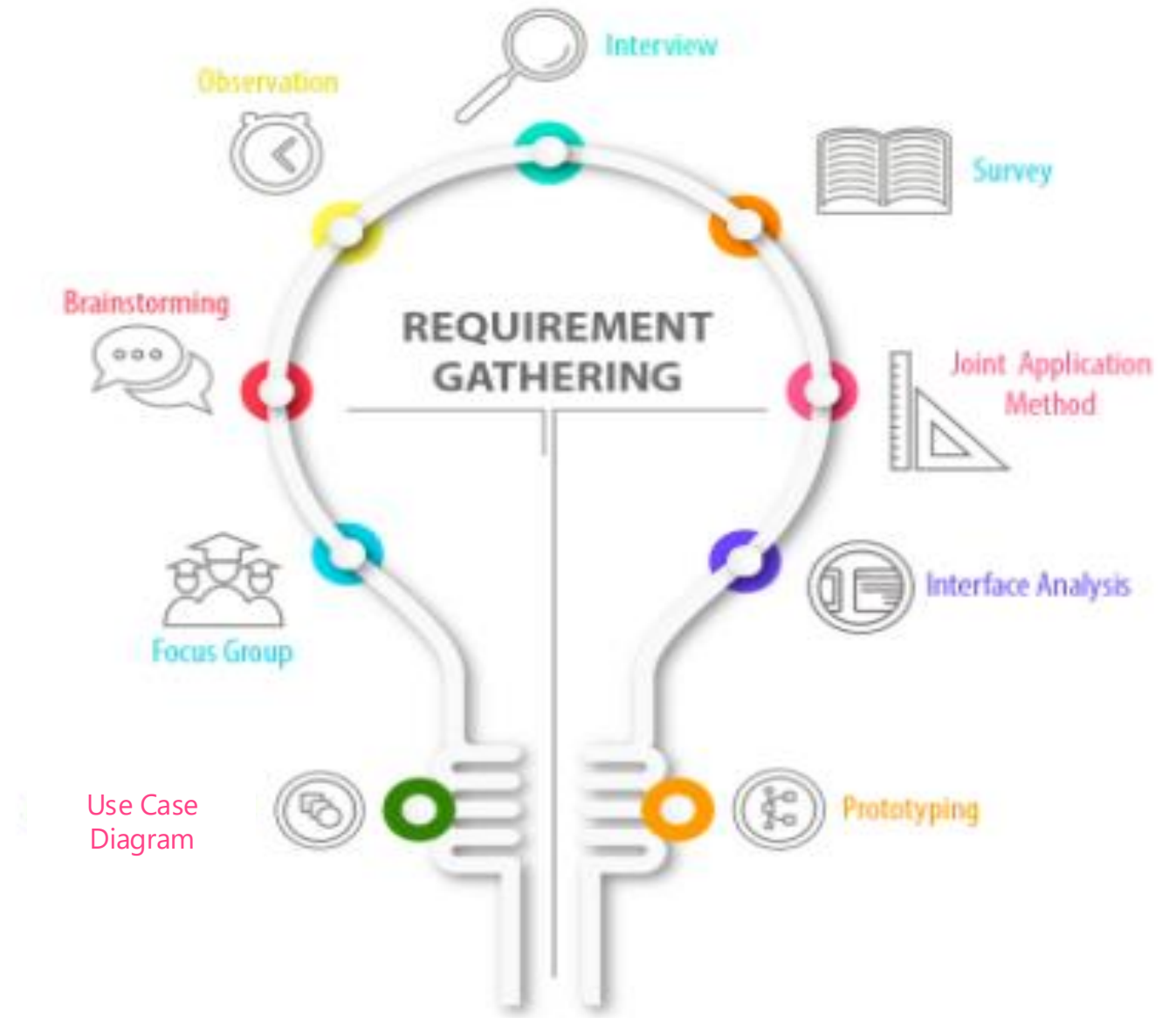
Incremental and Iterative development:

- Continual improvement
- Initial requirements gathering during planning
- Users/stakeholders are involved throughout the development
- User stories help to identify the value for the user
- Adapts to changing requirements

User story Mapping



Methods of Determining Requirements



Questionnaires / Surveys

- Fast & cheap way to gather data
- Easy to obtain information from a large sample of users
- However, they need to be clear and unambiguous
- And interesting to elicit people's response



Questionnaires can be extremely difficult to design

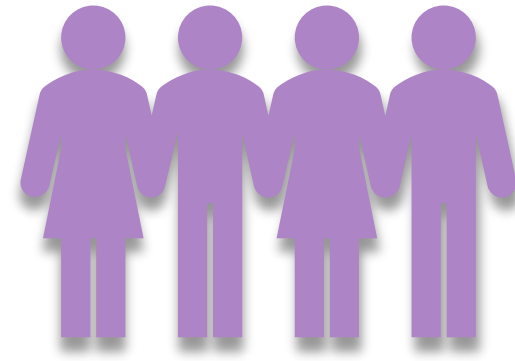
Sampling

Determine the data to be collected

What do you want to find out ?

Determine the population to be sampled

Who to ask, how to choose



- Stratified Sampling
- Random Sampling
- Convenience Sampling
- Quota Sampling
- Snowball Sampling
- ... and others

Question Design: Closed Questions

Dichotomous/Bipolar

- Two choices - e.g. Did you enjoy Freshers Fair?
 - Agree / Disagree or Yes / No

Multiple Choice/Multiple Answer

- Three or more choices - e.g. Which band do you prefer ...
- 1. Radiohead 2. Muse 3. The Killers

Semantic Differential

- Two bipolar words, with scale between - e.g.
- The entertainment available in Preston is ...
- Interesting :__ :x :__ :__ :__ :__ : Boring
- Varied :__ :__ :x :__ :__ :__ : Limited

Closed Questions

Strongly
agree

1

Agree

2

Neither
agree nor
disagree

3

Disagree

4

Strongly
disagree

5

Likert Scale

Show level of agree/disagreement with statement:
e.g. The campus is too spread out

Q6 How would you rate your satisfaction with the following features of this website? *

	<u>Very dissatisfied</u>		<u>OK</u>		<u>Very satisfied</u>	
General look & feel	☐	☐	☐	☐	☐	
Ease of getting around the site	☐	☐	☐	☐	☐	
Ease of finding specific information	☐	☐	☐	☐	☐	
Usefulness of the site search	☐	☐	☐	☐	☐	☐ Not used
Value of the information	☐	☐	☐	☐	☐	

What is wrong with this question?

What is wrong with this question?

* 44. Below is a list of crime and wellbeing issues relating to Universities and their students.

Please rank the top 5 issues in terms of their impact on you personally.

1 = Greatest impact on me; 5 = Least impact on me

	Greatest impact on me	2	3	4	Least impact on me
Bullying (online)	☐	☐	☐	☐	☐
Robbery	☐	☐	☐	☐	☐
Theft from person	☐	☐	☐	☐	☐
Drugs / Legal highs	☐	☐	☐	☐	☐
Mental health issues (e.g. depression; anxiety)	☐	☐	☐	☐	☐
Bike theft	☐	☐	☐	☐	☐
Student welfare issues	☐	☐	☐	☐	☐
Burglary	☐	☐	☐	☐	☐
Bullying (real-world)	☐	☐	☐	☐	☐
Theft of unattended item	☐	☐	☐	☐	☐
Sexual assault	☐	☐	☐	☐	☐
Radicalisation	☐	☐	☐	☐	☐
Sexual harassment	☐	☐	☐	☐	☐
Anti-social behaviour	☐	☐	☐	☐	☐
Physical assault	☐	☐	☐	☐	☐

Double-Barrelled Questions

Q. “Does your company have pension and health insurance benefits?”

Do you answer Yes or No to this if your company only has 1 of these benefits?

Question Design: Open Questions

Unstructured

Unlimited ways to respond

- Why did you ...
- And then what happened...
- What experience do you have of ...
- What software do you use to ...
- How do you feel about ...
- Give examples of ...

Open Questions

Advantages

- Freedom of expression
- No bias (hopefully!!)
- Qualify their answers

Disadvantages

- Time consuming
- Interpretation of response

Questionnaire Problems

Not being specific -
occasionally,
regularly, often vs
1 x week, 1 x month,
2 x month

Each question should
be applicable, or
there should be a
route to bypass it

Mutually exclusive
options - 1-10, 10-20,
20-30

Instructions /
questions are not
clear

Leading questions...

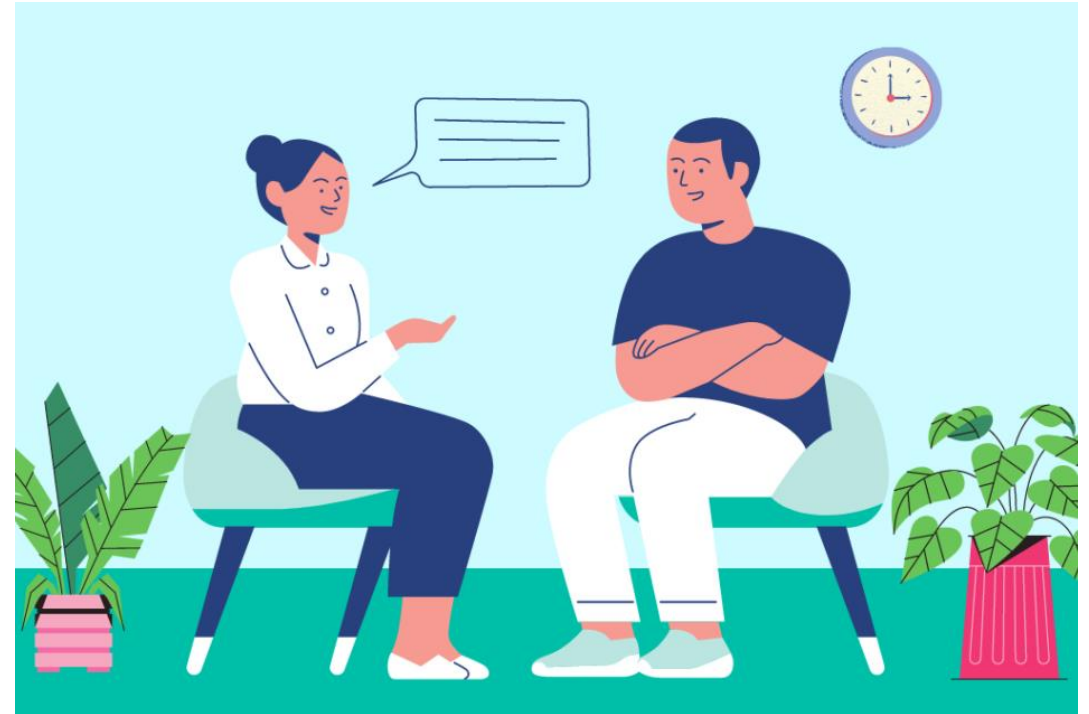
...Many students chose
UCLan because of its
high academic
standards - is that why
you chose to study
here?

Interviews

A conversation with a purpose

Help to build trust with the customer

Provides a deeper and richer perspective than questionnaires and surveys

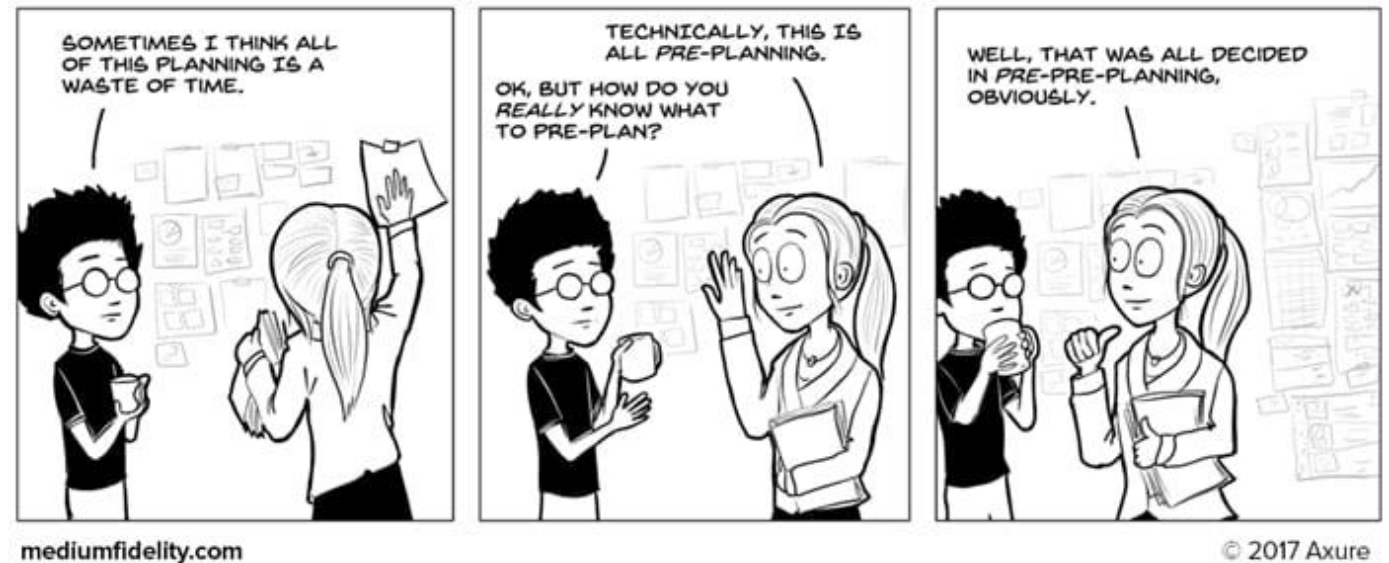


Everyone seems normal until you get to know them

Interviews

Planning and Preparation...

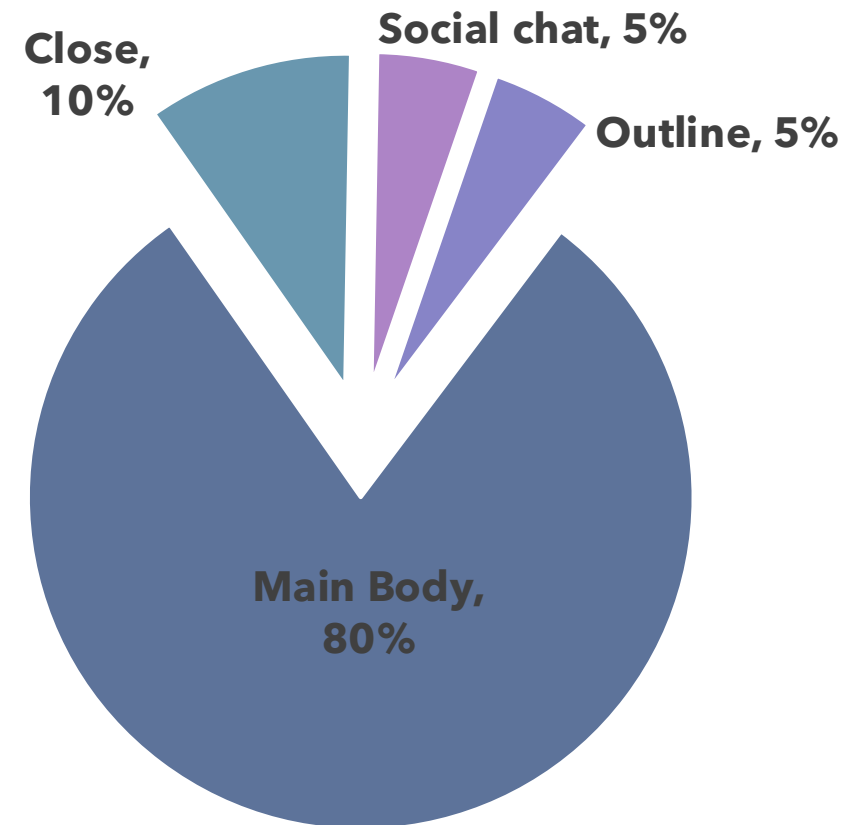
- Need a clear idea of objectives
- What is the scope for the interview?
- Who will you interview?
- Prioritised & logical sequence of topics
- Timing plan
- Prepare questions – open/closed?



Talk to CEO, Department Heads, Managers, Supervisors to identify objectives, scope and interviewees

Interviews

- **Social Chat:** Smile, introduce yourself, make eye contact, put the interviewee at ease.
- **Outline:** Explain the interview purpose, timings, structure, note-taking, thank for agreeing to be interviewed.
- **Main Body:** Follow your plan, actively listen, show empathy, make notes, keep an eye on reactions & body language, check understanding by paraphrasing and summarising.
- **Close:** Finish on time, review your notes, confirm main points, explain what will happen next, say thanks for their time and contributions.

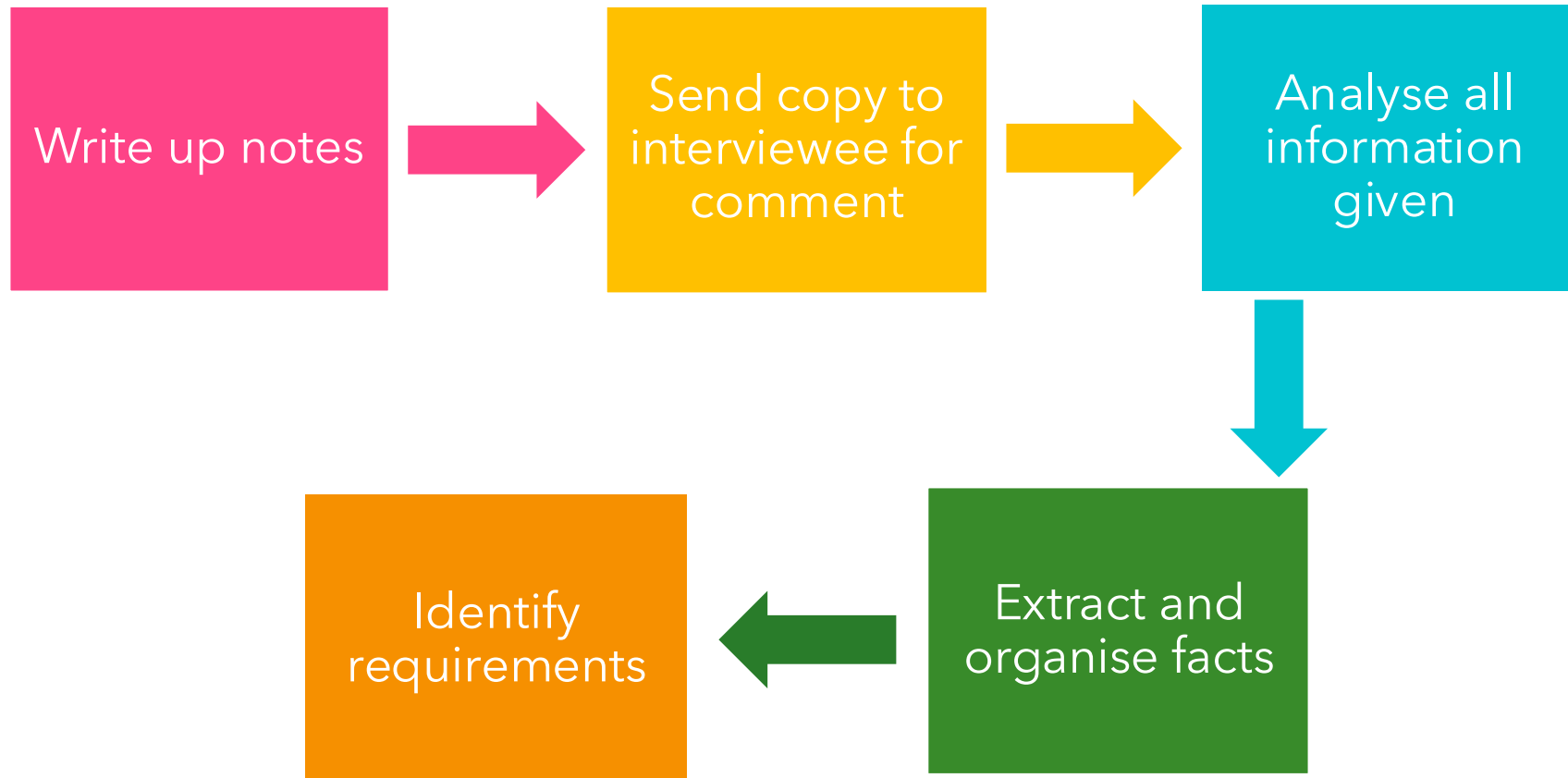


Interview Problems

- Will the analyst ask the right questions?
- There will be things that are obvious to the user that are not obvious to the analyst.
- The analyst relies on the user communicating what the analyst needs to know.
- Asking questions that result in too much irrelevant detail.
- Possibly losing control of the interview.



After the Interview



Observation



Gather valuable information on business processes

Discover things that cannot be seen using other methods

Ability to ask questions, clarify tasks or processes

Can compare to information gathered from other means

Need to consider whether what you are observing is a typical day/week

The Hawthorne Effect

Hawthorne Effect

An individual modifies an aspect of their behaviour because they know they are being observed

e.g. they improve their behaviour.



Shadowing

Walking in their shoes...



Similar to observation, but...

You gain more valuable first-hand experience by doing the job yourself

However, as with observation, the presence of an analyst could cause people to modify their behaviour

A significant amount of organisational knowledge is implied and never verbalised

Analysing Documents

- Business documents show the flow of data connected with an organisation
- A lot of information can be gleaned from examining forms and documents
- Documents can be internal and external to the organisation
- Reports, forms, organisational charts, job descriptions, etc.

Ask... what are they storing information about?

Time	Game Title	Console	Price	Loyalty Scheme Discount	Pre-Owned
08:05	Fantastic Four: Rise Of The Silver Surfer	PS2	£24.99	no	
08:20	Spider-Man 3	PS2	£29.99	yes	
09:30	Pirates Of The Caribbean: At World's End	DS	£29.99	no	
11:00	Pirates Of The Caribbean: At World's End	Wii	£34.99		
11:50	Hospital Tycoon	PC	£9.99		
11:52	Diner Dash	PSP			
12:00	Need For Speed: Carbon	XBOX	£19.99		
12:05	FIFA 07	XBOX	£29.99	no	
12:20	Brothers In Arms	DS	£29.99	no	
12:25	Pirates Of The Caribbean: At World's End	PS2	£29.99	no	
12:25	Rayman: Raving Rabbids	GBA	£19.99		
12:30	Fantastic Four: Rise Of The Silver Surfer	PS3	£29.99	no	
12:45	Ratchet & Clank: Size Matters	PSP	£34.99	yes	
12:55	Mercury Meltdown Revolution				

Card 1014

Total: £29.99
Discount: 1.49
15% / P Sn

Product Manager Job Description

Product Manager Job Description Sample #1 (Primarily inbound)

Product Manager Job Description
The Product Manager is responsible for the product planning and execution throughout the product lifecycle, including: gathering and prioritizing product and customer requirements, defining the product vision, and working closely with engineering, sales, marketing and support to ensure revenue and customer satisfaction goals are met. The Product Manager's job also includes ensuring that the product supports the company's overall strategy and goals.

The Product Manager is expected to:

- Define the product strategy and roadmap
- Deliver MRDs and PRDs with prioritized features and corresponding justification
- Work with external third parties to assess partnerships and licensing opportunities
- Run beta and pilot programs with early-stage products and samples
- Be an expert with respect to the competition
- Act as a leader within the company
- Required experience and knowledge

Requirements

- Minimum of N years experience as a Product Manager
- Demonstrated success defining and launching excellent products
- N+ years of experience in a job in the XXX market
- Excellent written and verbal communication skills
- Bachelor's degree (MBA preferred)
- Technical background, with experience in XXX
- Excellent teamwork skills
- Proven ability to influence cross-functional teams without formal authority
- Must be able to travel XXX% of the time
- Examples and at least one sample of an effective document delivered in the past

Game Title	Console	Selling Price	Buying Price	Amount In Stock
1. Brothers In Arms	DS	£29.99	£18.56	3
2. Pirates Of The Caribbean: At World's End	DS	£29.99	£18.56	5
3. Rayman: Raving Rabbids	GBA	£19.99	£18.56	2
4. Hospital Tycoon	PC	£9.99	£5.00	1
5. Fantastic Four: Rise Of The Silver Surfer	PS2	£24.99	£18.56	6
6. Spider-Man 3	PS2	£29.99	£16.52	5
7. Fantastic Four: Rise Of The Silver Surfer	PS3	£29.99	£18.22	3
8. Pirates Of The Caribbean: At World's End	PS3	£39.99	£18.22	8
9. Diner Dash	PSP	£39.99	£20.00	4
10. Pirates Of The Caribbean: At World's End	PSP	£29.99	£18.56	2
11. Ratchet & Clank: Size Matters	PSP	£29.99	£18.02	3
12. Mercury Meltdown Revolution	Wii	£34.99	£18.22	4
13. Pirates Of The Caribbean: At World's End	Wii	£39.99	£18.22	6
14. FIFA 07	XBOX	£34.99	£18.22	8
15. Need For Speed: Carbon	XBOX	£19.99	£18.56	4
16.	XBOX	£39.99	£18.56	1
17.				2

Workshops

Facilitated meeting

Everyone gets 'air-time'

Fresh ideas

Speeds up delivery time



Methods of Determining Requirements

Questionnaires
& Surveys

Interviews

Workshops &
Focus Groups

Observation

Shadowing

Examining
Documents

Brainstorming

Prototyping

Previous Studies



References

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- Observing Users: <https://www.linkedin.com/learning/ux-design-2-analyzing-user-data/understand-good-observation-techniques>

Any Questions?