MONASH University

Information Technology

FIT2001 – Systems Development

Seminar 3: Investigating System Requirements
Information Gathering Techniques

Chris Gonsalvez

Our road map:

- What are Information Systems?
- How do we develop them? Systems Development (SDLC) – key phases
- Some System Development roles and skills
- Development approaches – focus on Agile

- How do we find out what the user wants?
- Who do we need to talk to?
- Data gathering methods

At the end of this seminar you will:

- Understand the requirements gathering process
- Explain the difference between functional and non-functional requirements
- Understand how to investigate and validate the requirements using a range of techniques, and be able to determine when each is best applied

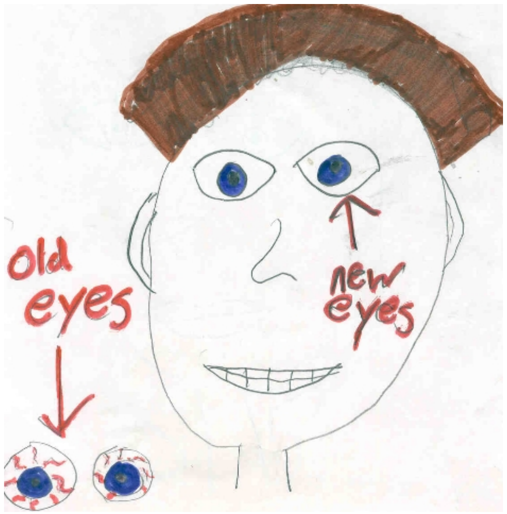
What is requirements gathering?

- Investigating requirements using a range of techniques

Developing a deep understanding of the business domain

- Defining what the solution needs to be to meet the requirements

What is requirements gathering?



Bringing ‘fresh eyes’ to the problem

Identifying opportunities for improving business processes – Business Process Re-engineering (BPR)

Requirements must be verified by the client

What do you need to gather?

Requirement categories	FURPS + categories	Example requirements
Functional	Functions	Business rules and processes
Nonfunctional	Usability	User interface, ease of use
	Reliability	Failure rate, recovery methods
	Performance	Response time, throughput
	Security	Access controls, encryption
	+ Design constraints	Hardware and support software
	Implementation	Development tools, protocols
	Interface	Data interchange formats
	Physical	Size, weight, power consumption
	Support	Installation and updates

Systems Analysis and Design in a Changing World, 7th Edition – Figure p45-47

Investigating Requirements Case Study

ON THE SPOT COURIER SERVICES

Bill Wiley – start up, same day courier service

Initially just received delivery requests via texts on his mobile, but then customers started asking if he had a website where they could place orders

As the business grew, Bill hired another person to help with the deliveries. He could no longer use his van as the 'warehouse', he now needed a central warehouse where he could organise and distribute packages for delivery, and if it grew further someone at the warehouse to co-ordinate the arrival and distribution of the packages

What information do you need to gather for On the Spot Courier Services

We now know:

Why we want to gather requirements?

What we need to investigate?

Who we need to gather these requirements from?

. . . our next step is work out:

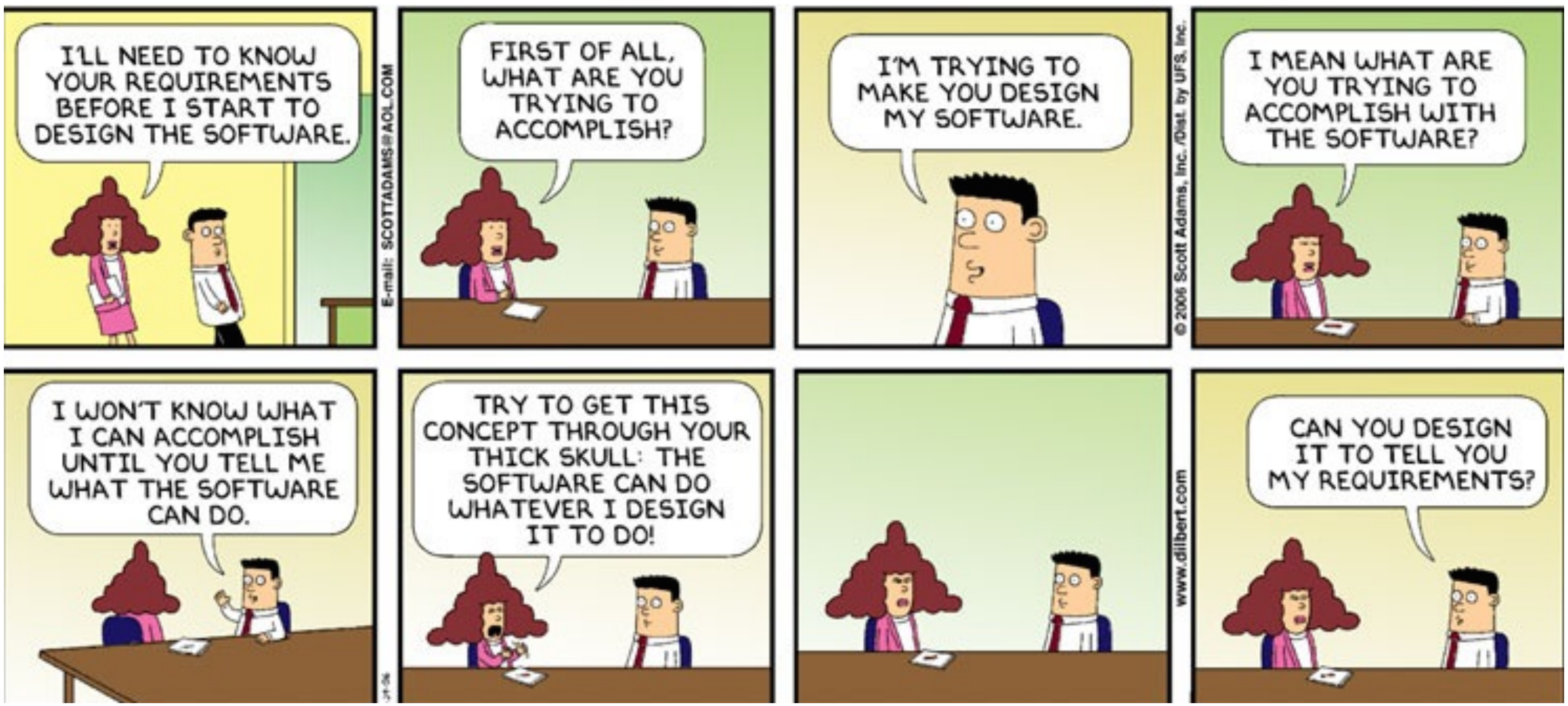
How to find out what the user wants?

What approaches do we use to gather User Stories?

(the Agile way of documenting requirements – more next week)

INVESTIGATING SYSTEM REQUIREMENTS

Can be quite challenging …



… Users often find it difficult to articulate exactly what they want

Common fact finding techniques:

1. Interview users/stakeholders
2. Use questionnaires to gather information
3. Observe business processes
4. Review existing reports, forms, and procedure descriptions
5. Research vendor/competitor solutions
6. Prototyping *
7. Story-writing workshops *

* *To be discussed next week*

1. Interviewing

- An effective way to understand business functions and rules
- But time-consuming, resource intensive … multiple sessions

Preparing for a Successful Interview

Set clear objectives

What types of information do you expect to get?

Preparing for a Successful Interview

Select appropriate stakeholders to interview

Do your research about the participant

Preparing for a Successful Interview

Determine the type of interview

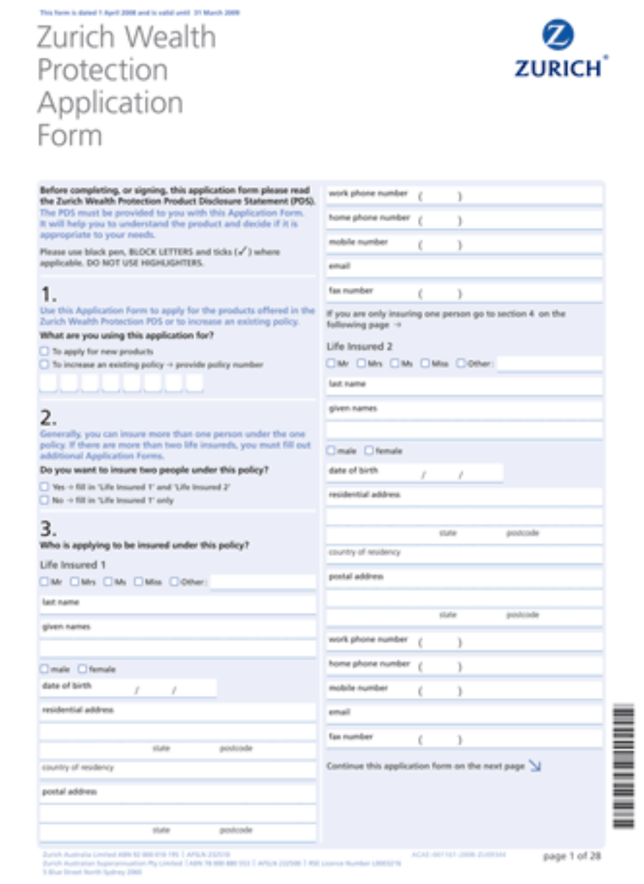
One-on-one interview

Group interview

Preparing for a Successful Interview

Consider company documentation

Forms


Zurich Wealth Protection Application Form

ZURICH

Before completing, or signing, this application form please read the Zurich Wealth Protection Product Disclosure Statement (PDS).

1.

What are you using this application for?

2.

Do you want to insure two people under this policy?

3.

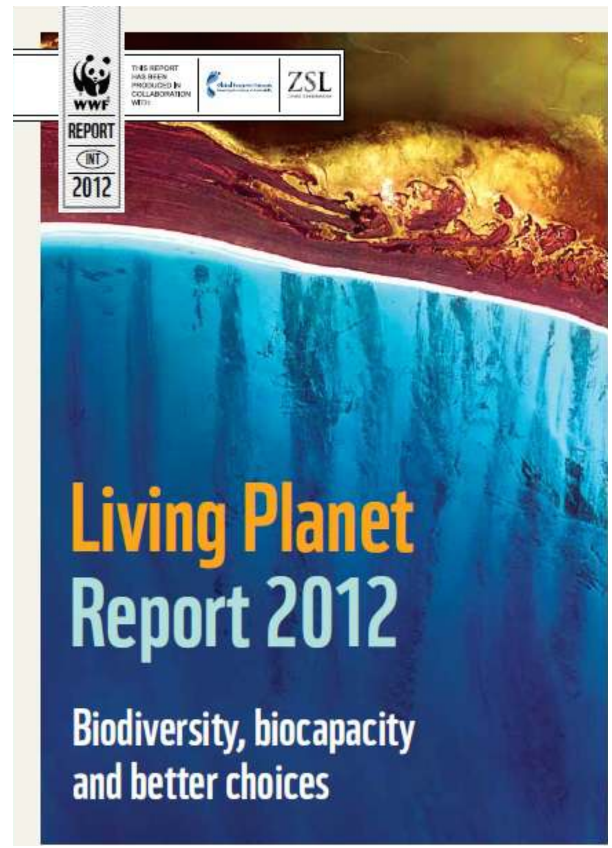
Who is applying to be insured under this policy?

Life Insured 1

Life Insured 2

page 1 of 28

Reports



Preparing for a Successful Interview

Develop an Agenda

Discussion and Interview Agenda

Setting

Objective of Interview
Determine processing rules for sales commission rates

Date, Time, and Location
April 21, 2012, at 9:00 a.m. in William McDougal's office

User Participants (names and titles/positions)
William McDougal, vice president of marketing and sales, and several of his staff

Project Team Participants
Mary Ellen Green and Jim Williams

Interview/Discussion

1. *Who is eligible for sales commissions?*
2. *What is the basis for commissions? What rates are paid?*
3. *How is commission for returns handled?*
4. *Are there special incentives? Contests? Programs based on time?*
5. *Is there a variable scale for commissions? Are there quotas?*
6. *What are the exceptions?*

Follow-Up

Important decisions or answers to questions
See attached write-up on commission policies

Open items not resolved with assignments for solution
See Item numbers 2 and 3 on open items list

Date and time of next meeting or follow-up session
April 28, 2012, at 9:00 a.m.

Systems Analysis and Design in a Changing World, 7th Edition, Figure 2.8, p53

Preparing for a Successful Interview

Avoid long interviews …

Hard to absorb large amounts of information at one time

Participants often time poor

Several shorter interviews better .. can clarify information

Preparing for a Successful Interview - Summary

- Set objectives
  Clear focus, What types of information do you expect to get
- Select appropriate stakeholders to interview
  Do your research about the participant
- Determine the type of interview
  One on one vs. Group
- Consider outside information – forms, reports, etc.
  Will make the interview time more productive
- Develop an agenda
- Documents objectives, nothing forgotten, logical progression
- Avoid long interviews because
  Stakeholders often time poor, Hard to absorb large amounts of information at one time
- Several shorter interviews better because:
  Can ask further probing questions to seek clarifications
  Can verify requirements collected from previous iterations of interviews

Preparing for a Successful Interview - Logistics

- Planning – Interviewees have been sent:
  - Location and time
  - Objectives and list of questions
- Finalise interview arrangements - send reminders
- Arrive early
- Ensure that the room is prepared for conducting interviews
- Decide on a documentation method
  - Take notes, Recording, Video taped – always get permission

Tips and Tricks for a successful interview

- Interview Skills - Youtube video: Reporter Katie Couric
- Lead the conversation with the information that you already know
- Consider the interviewee's knowledge and role
- Use phrases and words that are easy to understand
- Ask lots of open-ended questions
  - Useful for identifying new ideas
  - Help analysts to identify a large number of business processes quickly
- Use closed questions to collect specific facts (e.g. how many forms a day a sales executive process?)
- Avoid biased or loaded questions
- Paraphrase important findings throughout the interview to make sure you have accurate understanding
- Ask for the opportunity to follow up after the interview to fill in any gaps you may have
- Checklist for conducting an interview

Checklist for Conducting an Interview

Before

- Establish the objective for the interview.
- Determine correct user(s) to be involved.
- Determine project team members to participate.
- Build a list of questions and issues to be discussed.
- Review related documents and materials.
- Set the time and location.
- Inform all participants of objective, time, and locations.

During

- Arrive on time.
- Look for exception and error conditions.
- Probe for details.
- Take thorough notes.
- Identify and document unanswered items or open questions.

After

- Review notes for accuracy, completeness, and understanding.
- Transfer information to appropriate models and documents.
- Identify areas needing further clarification.
- Thank the participants.
- Follow up on open and unanswered questions.

Systems Analysis and Design in a Changing World, 7th Edition, Figure 2.7, p52

How to Get the Information You Want

- Review current business problems

  Beware: Excessive attention given to current system may result in suggesting a new system that only automates the current system

  Determine the high level steps of the process.

  Talk about activities and responsibilities for every role

  Ask leading questions about each part of the process

  Identify exception and error-handling

  Ask questions to identify new system requirements and identify business opportunities

- Sample of question themes

Question themes in interviews

Theme	Questions to users
What are the business operations and processes?	What do you do?
How should those operations be performed?	How do you do it? What steps do you follow? How could they be done differently?
What information is needed to perform those operations?	What information do you use? What inputs do you use? What outputs do you produce?

Systems Analysis and Design in a Changing World, 7th Edition – Figure 2.6, p50

Interview – Follow up

- All documentation created after the interview should be reviewed by the participants for accuracy as soon as possible after the interview
- Follow up interviews are required to explain and verify the models with the interview participants, and ask further questions

You will have unresolved issues

They should be tracked and resolved

Sample 'Open items' list

A sample open-items list
…. unresolved issues need answers

OUTSTANDING ISSUES CONTROL TABLE						
ID	Issue Title	Date Identified	Target End Date	Responsible Project Person	User Contact	Comments
1	Partial Shipments	6-12-2005	7-15-2005	Jim Williams	Jason Nadold	Ship partials or wait for full shipment?
2	Return and Commissions	7-01-2005	9-01-2005	Jim Williams	William McDougal	Are commissions recouped on returns?
3	Extra Commissions	7-01-2005	8-01-2005	Mary Ellen Green	William McDougal	How to handle commissions on special promotions?

Systems Analysis and Design in a Changing World, 7th Edition, Figure 2.9, p55

2. Questionnaires

- Suited to gathering limited and specific information from a large number of stakeholders
- Good when the people are widely dispersed
- Can give a preliminary insight into business

conduct a successful interview

- Not well suited for gathering detailed information
- Open-ended questions encourage discussion and elaboration, but stakeholders will often not complete them
- Must be written effectively – clear, flows well, respondents questions anticipated
- Sample Questionnaire

RMO Questionnaire

This questionnaire is being sent to all telephone-order sales personnel. As you know, RMO is developing a new customer support system for order taking and customer service.

The purpose of this questionnaire is to obtain preliminary information to assist in defining the requirements for the new system. Follow-up discussions will be held to permit everybody to elaborate on the system requirements.

Part I. Answer these questions based on a typical four-hour shift.

1. How many phone calls do you receive?___________________________
2. How many phone calls are necessary to place an order for a product?___________________
3. How many phone calls are for information about RMO products, that is, questions only?____________
4. Estimate how many times during a shift customers request items that are out of stock.____________
5. Of those out-of-stock requests, what percentage of the time does the customer desire to put the item on back order?______________%
6. How many times does a customer try to order from an expired catalog?___________________
7. How many times does a customer cancel an order in the middle of the conversation?____________
8. How many times does an order get denied due to bad credit?___________________________

Part II. Circle the appropriate number on the scale from 1 to 7 based on how strongly you agree or disagree with the statement.

Question	Strongly Agree				Strongly Disagree		
It would help me do my job better to have longer descriptions of products available while talking to a customer.	1	2	3	4	5	6	7
It would help me do my job better if I had the past purchase history of the customer available.	1	2	3	4	5	6	7
I could provide better service to the customer if I had information about accessories that were appropriate for the items ordered.	1	2	3	4	5	6	7
The computer response time is slow and causes difficulties in responding to customer requests.	1	2	3	4	5	6	7

Part III. Please enter your opinions and comments.

Please briefly identify the problems with the current system that you would like to see resolved in a new system.

____

____

____

Systems Analysis and Design in a Changing World, 7th Edition, Figure 2.10, p55

3. Review existing reports, forms, and procedure descriptions

- Existing business documents and procedure descriptions within organization
  - Obtain preliminary understanding of processes
  - Identify business rules, discrepancies, and redundancies
  - Be cautious of outdated material
  - Can help guide interviews

Sample form

Sample order form

Ridgeline Mountain Outfitters—Customer Order Form

RIDGELINE MOUNTAIN OUTFITTERS

Name and address of person placing order.
(Please verify your mailing address and make correction below.)
Order Date __/__/__

Name

Address Apt. No

City State Zip

Phone: Day ( ) ________ Evening ( ) ________

Gift Order or Ship To: (Use only if different from address at left.)

Name

Address Apt. No

City State Zip

Gift ☐ Address for this Shipment Only ☐ Permanent Change of Address ☐

Gift Card Message

Delivery Phone ( ) ________

	Item No.	Description	Style	Color	Size	Sleeve Length	Qty	Monogram	Style	Price Each	Total

MERCHANDISE TOTAL ________

Regular FedEx shipping $4.50 per U.S. delivery address
(Items are sent within 24 hours for delivery in 2 to 4 days) ________

Please add $4.50 per each additional U.S. delivery address ________

FedEx Standard Overnight Service ________

Any additional freight charges ________

International Shipping (see shipping information on back) ________

Method of Payment

Check/Money Order ☐ Gift Certificate(s) ☐ AMOUNT ENCLOSED $ ____

American Express ☐ MasterCard ☐ VISA ☐ Other ☐

Account Number ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

MO YR
__/__
Expiration Date

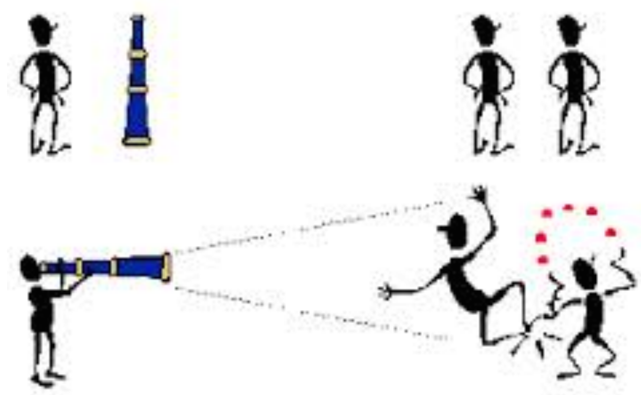
Signature

Systems Analysis and Design in a Changing World, 7th Edition, Figure 2.11, p56

4. Observe business processes

- Varies from office walkthrough to performing actual tasks
- Not necessary to observe all processes at same level of detail
- May make users nervous, so use common sense

Hawthorne effect: also referred to as the **observer effect** refers to a pheonomenon whereby workers imporove or modify an aspect of their behaviour, or stop working in response to the fact that they are being watched



5. Research vendor/competitor solutions

- Many problems have been solved by other companies – have a look around for good ideas
- Positive contributions of vendor solutions
  - Frequently provide new ideas
  - May be state of the art
  - Cheaper and less risky
- Danger
  - May purchase solution before understanding problem

Validating the requirements

- Meet with users regularly to get feedback on your understanding of the system
- You must confirm that your understanding of the requirements is correct
- You are aiming for requirements that are:

Complete – all functions identified

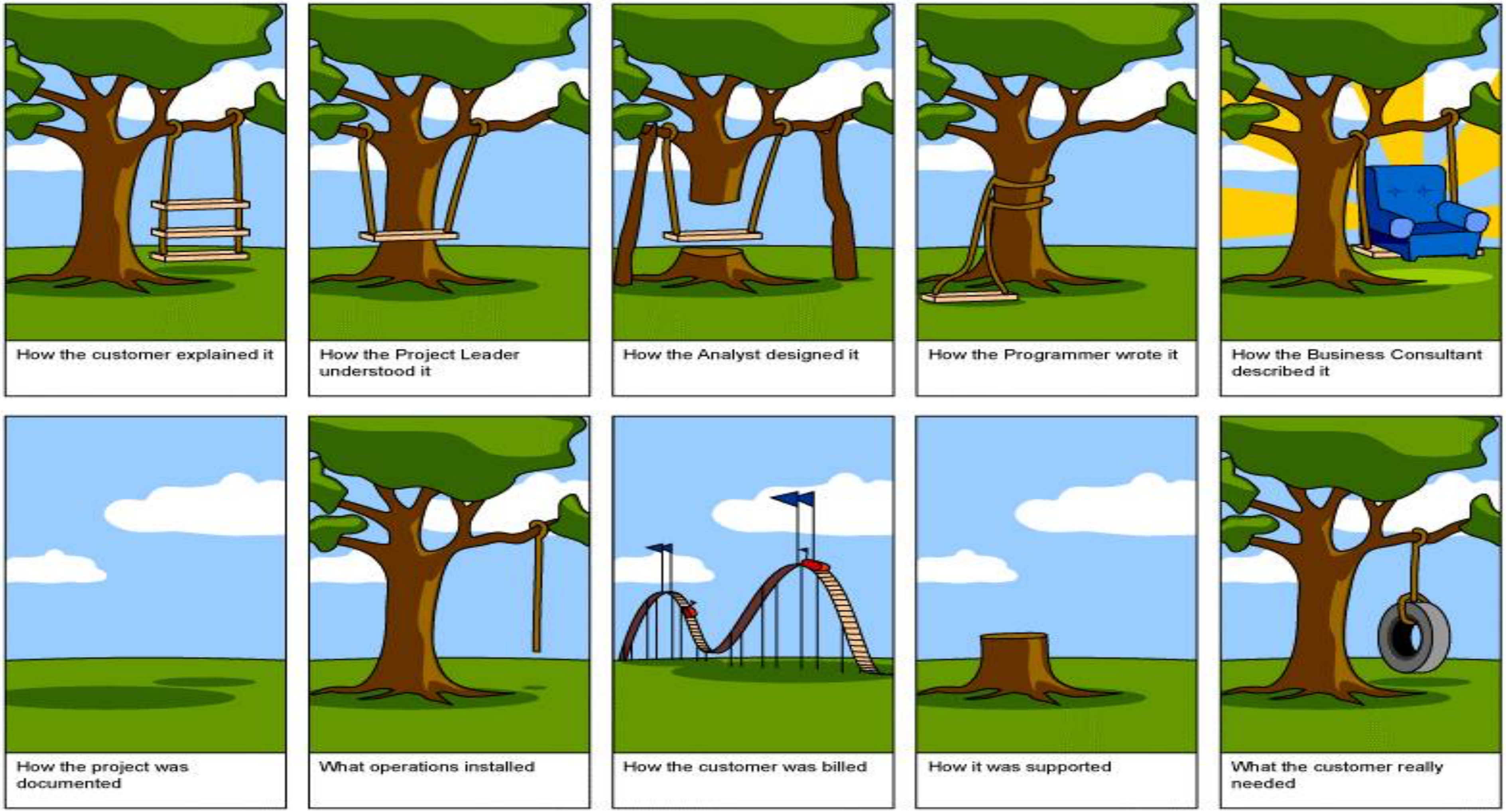
Unambiguous – nothing vague or fuzzy

Sufficient – level of detail okay

Testable – can check if working as intended

Consistent – no conflicts among requirements

No-one said it was easy …



You now know the basics of:

- The role of requirements gathering in System development
- A range of techniques to help you investigate requirements

Workshop Preparation

- Watch Seminar 3
- Review any resources

Thanks for watching
See you next week

Resources:

Prescribed text:

– Satzinger, J. W., Jackson, R.B., and Burd, S.D.(2016) Systems Analysis and Design in a Changing World, 7th Edition, Cengage Learning, Chapter 12

Resources:

- Interview Skills: Katie Couric video– not about requirements gathering but still very useful

  https://www.youtube.com/watch?v=4eOynrI2eTM

- Questionnaires: very detailed (you are not required to know this level of detail), nonetheless a valuable resource

  https://www.youtube.com/watch?v=rSwVZJT9j1c