# 31269: Business Requirements Modeling

## Week 2 Lecture - Requirements Process

- References
  - Mastering The Requirements Process, Chapter 2
  - BABOK Guide Version 2.0, Chapters 1 and 2

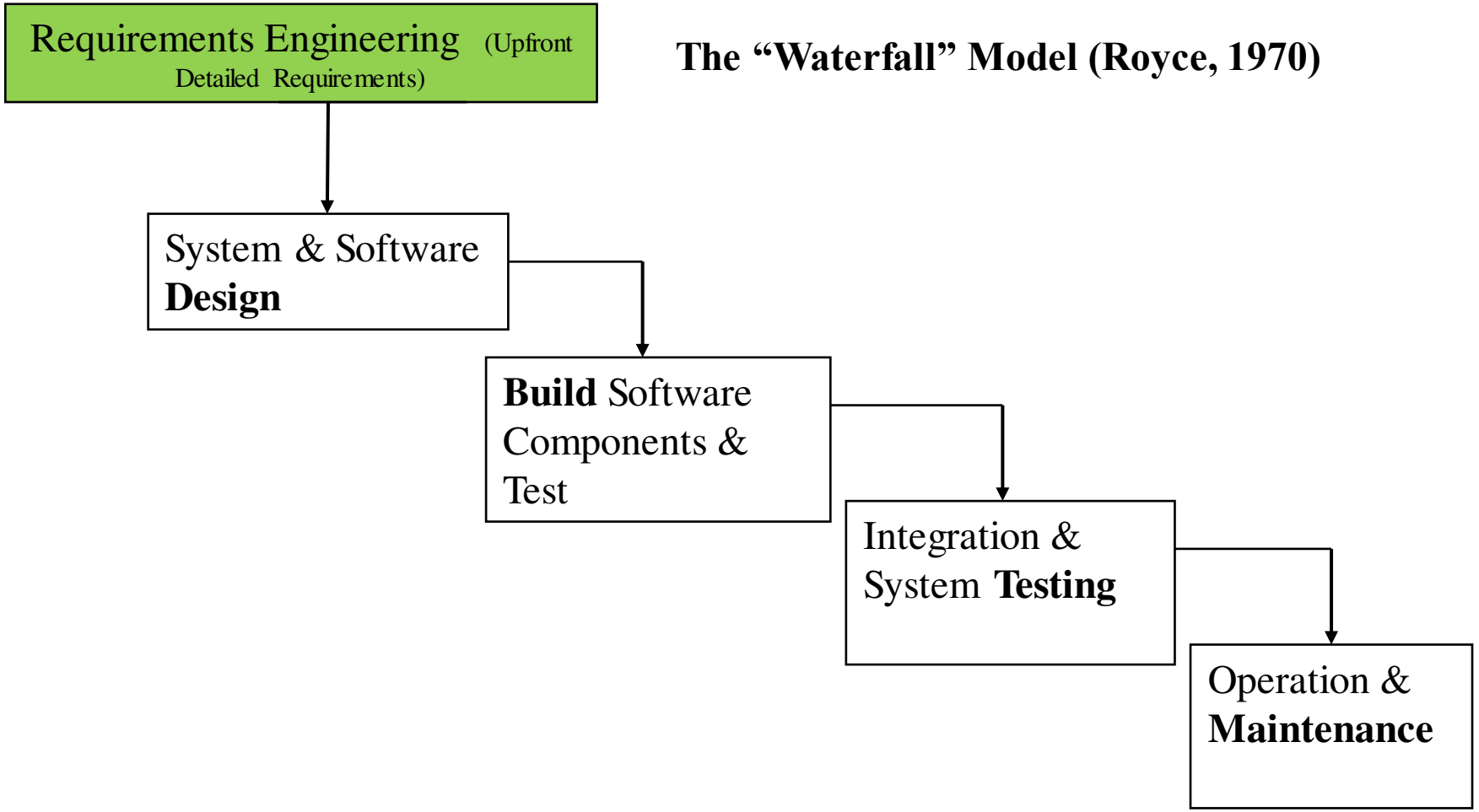
# Objectives

- Understand requirements process within the system development process.
- Understand the requirements process, its stages/phases and activities.
- Identify Stakeholders and understand who they are.

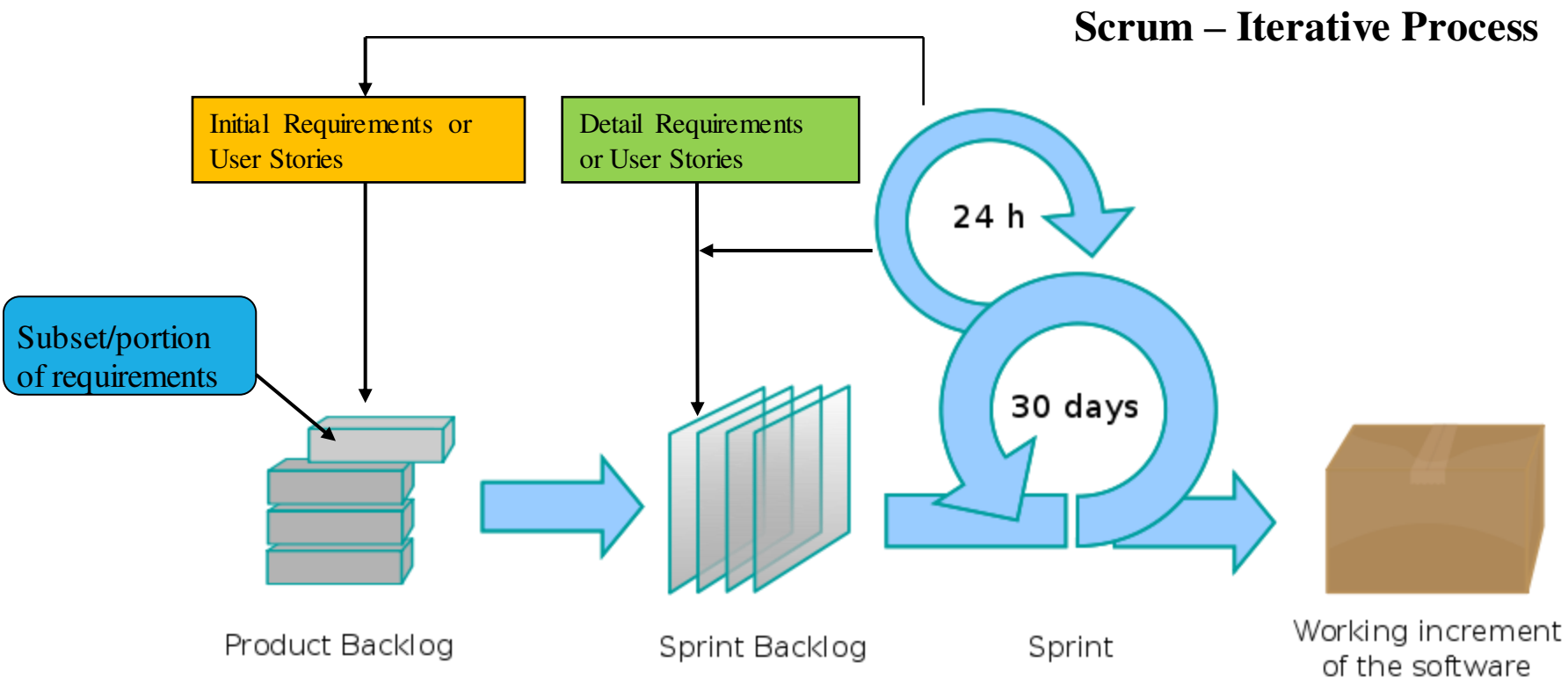
# Topics

- System Development Process
  - Requirements Process
    - Stakeholders Analysis
- Types of Requirements
  - Functional requirements
  - Non-functional requirements

# Waterfall System Development Process



# Agile System Development Process



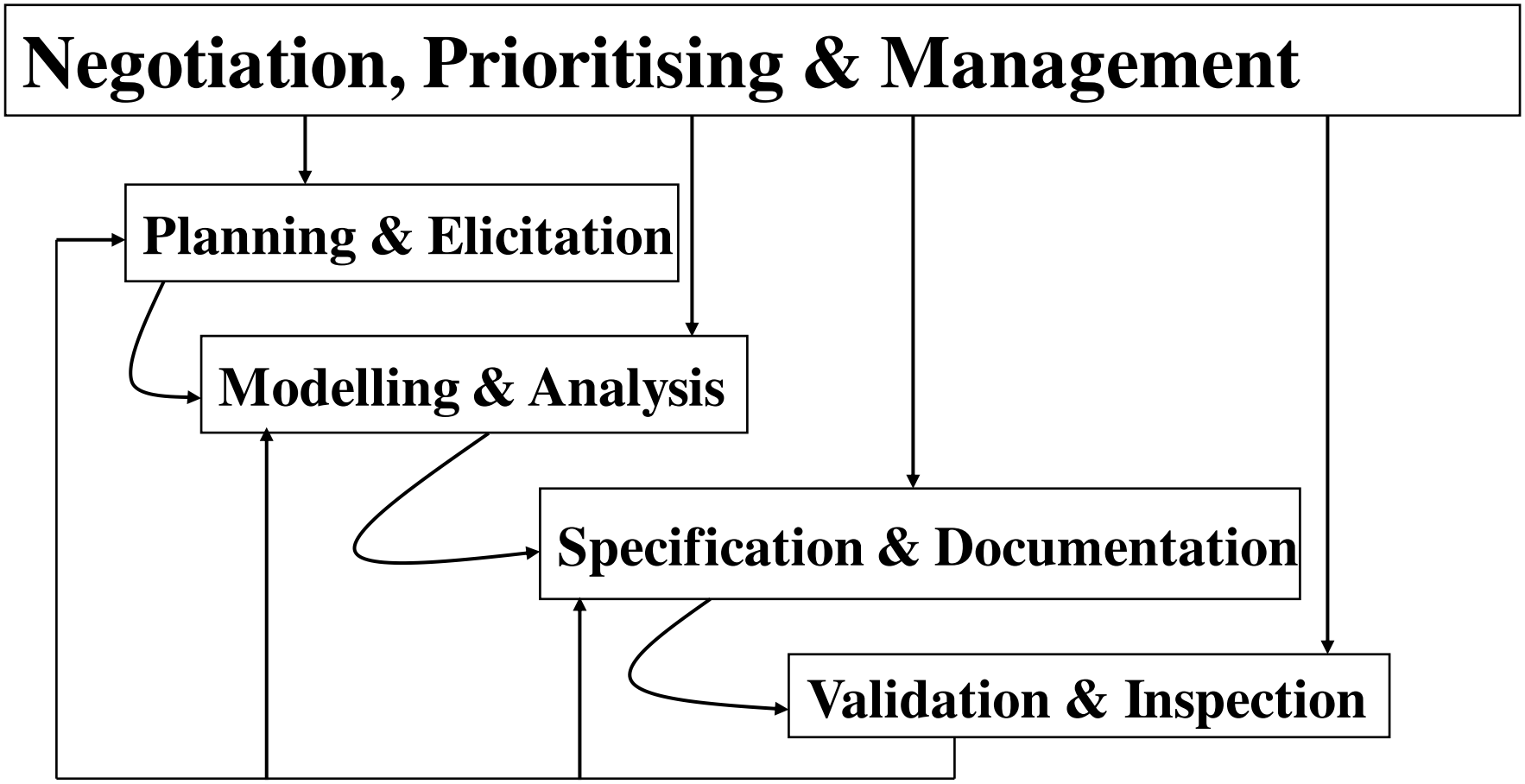

Please watch the video available on uts online – "Intro to Agile Scrum in Under 10 Minutes" and read the notes section of this slide.

Source: http://en.wikipedia.org/wiki/Scrum_(development)

# Requirements Engineering/ Development/Gathering Process

- To find the correct and complete requirements, we need some kind of **orderly process**. And hence we need Requirements Process.
- **Process** is a set of steps (phases) that a software program goes through when developed.
- It is a **structure** imposed on the development of a software product.
- Each phase produces deliverables required by the next phase in the life cycle.

# Requirements Process



# Requirements Process

- Requirements process includes:
  - stages/phases (e.g. Planning, Analysis, Elicitation, Specification, etc.)
  - activities and tasks (within each stage/phase)
  - techniques
  - tools

  for discovering the purpose of the “software”, and the needs of the users to support their activities.

# Requirements Process

- Requirements process includes
  - identifying stakeholders
  - their needs
  - documenting these requirements in a form of **model** that is amenable to
    - analysis
    - communication
    - subsequent implementation

# Requirements Engineering

- Software system development is driven by
  - **“Requirements Engineering”**

- **Requirements engineering** (RE) refers to the process of defining, documenting and maintaining requirements and to the subfields of systems engineering and software engineering concerned with this process.

http://en.wikipedia.org/wiki/Requirements_engineering

# Requirements Quality

- Requirements are SMART
  - **S**pecific, Simple
  - **M**easureable, Manageable
  - **A**ttainable (Achievable, Actionable, Appropriate)
  - **R**ealistic (Rationale, Result Oriented, Realistic to deliver)
  - **T**ime-bound (Timely, Testable, Traceable)

More details in workshop notes. Also, please refer notes section of this slide.

http://jessica80304.wordpress.com/2008/08/04/smart-requirements/

# Types of Requirements

- Functional Requirements (things product must do)
  - Examples:
    - The software system should be able to produce a monthly sales report for a given month…
    - The system shall enable hotel guests to book a room online.
- Non-functional Requirements (qualities product must have)
  - Examples:
    - The software system should be able to produce a monthly sales report for a given month in less than 5 seconds…
    - The software system should be able to produce a monthly sales report for a given month in less than 5 seconds and display it on iPad…
    - The system shall be able to process 100 payment transactions per second.

# Requirements types

- Functional Requirements (**things product must do**)
  - describe the behavior and information that the solution will manage.
  - They describe **capabilities** the system will be able to perform in terms of behaviors or operations—specific information technology application actions or responses.
- Non-functional Requirements (**qualities product must have**)
  - capture conditions that do not directly relate to the behavior or functionality of the solution, but rather describe environmental conditions under which the solution must remain effective or qualities that the systems must have.
  - They are also known as quality or supplementary requirements. These can include requirements related to **capacity**, **speed**, **safety**, **security**, **availability** and the information architecture and presentation of the user interface. Examples include software **performance** requirements, external **interface** requirements, software design constraints and software quality attributes.

# Requirements Activities/Tasks

- Requirements are
  - Identified
  - Captured
  - Managed
  - Communicated
  - Prioritised
  - Estimated
  - Scoped
  - De-scoped
  - Signed Off

# Requirements Process Stages: **Requirements Elicitation**

- Process of seeking, uncovering, acquiring, and elaborating requirements for computer based systems.
- Requirements are elicited rather than just captured or collected. This implies there are discovery, emergence, and development elements to the elicitation process.
- A complex process involving many activities with a variety of available techniques, approaches, and tools.
- **Stakeholders Analysis**

# Requirements Elicitation Techniques

- Brain Storming
- Interviews
- Requirements Workshops
- Document Analysis
- Observation
- Prototyping
- Survey questionnaires

Note: More details in next week's lecture on Requirements Elicitation

# Requirements Process Stages: **Requirements Analysis & Modelling**

- **Requirements Analysis:** determining whether the stated requirements are clear, complete, consistent and unambiguous, and resolving any apparent conflicts.
- **Requirements Modelling**: developing a set of diagrams known as requirements models, each of which focuses on a different aspect of the users' needs. e.g.
  - Business Process Modelling with BPMN
  - Data Modelling with ERD
  - Object Oriented Modelling with UML

# Requirements Process Stages: **Requirements Specification & Requirements Validation**

- **Requirements Specification**: After analysing and modelling the requirements, requirements are specified and documented in a software **requirements specification** (SRS) document.

- **Requirements Verification and Validation**: checking that the documented requirements and models are consistent and meet stakeholder needs.

# Requirements Process Stages:
# Requirements Management

- **Requirements management** is the process of documenting, analyzing, tracing, prioritizing and agreeing on requirements and then controlling change and communicating to relevant stakeholders.

- It is **a continuous process** throughout a project.

- The purpose of requirements management is to ensure that an organization documents, verifies, and meets the needs and expectations of its customers and internal or external stakeholders.

# Requirements Process Stages:
# Requirements Management

- **Requirements Management Tools**
  - Requirements Backlog
  - Burndown charts
  - Requirements Register or Excel Spreadsheet
  - IBM JazzHub
  - JIRA

# Who are Stakeholders?

- Stakeholders
  - An individual, team or organisation who have interest in, or can influence or be affected by, or participate in the development of requirements and relative software system projects
  - Stakeholder have different roles based on their interest and responsibility in an organisation
  - Failure to discover all stakeholders can mean failure to discover all their needs.

# Stakeholder Classes/Types/Roles

- Sponsor
- Owner
- Project Manager
- **Business Analyst (BA) – our role**
- Quality Analyst
- Customer
- Supplier
- End User
- Domain Subject Matter Expert (SME)
- Implementation Subject Matter Expert (SME)
- Support Professionals
- Regulator

# Stakeholder Classes

- **Users**: Users have an interest in having a product that does their work correctly. They are people who will ultimately be hands on operators of your product.
- **Sponsor**: Sponsor is an owner representative and represents owner's interest. Pays for the development of the product. For e.g., Departmental Manager, Program Manager, etc.
- **Subject Matter Experts**: People who have specialised knowledge of the business subject, individual with in-depth knowledge of a topic relevant to the business need or solution scope

# Stakeholder Classes

- **Customer**: The customer buys the product once it is developed. A customer is a stakeholder outside the boundary of a given organization or organizational unit. Know this person well to understand what he/she finds valuable and what appeals to them.
- **Developers/Software Engineers:** Developers are responsible for the construction of software applications. Areas of expertise among developers or software engineers include particular languages or application components.
- **Project Manager:** Project managers are responsible for managing the work required to deliver a solution that meets a business need, and for ensuring that the project's objectives are met while balancing the project constraints, including scope, budget, schedule, resources, quality, risk, and others.

For more details see BABOK Guide Chapter1.

# Stakeholders Analysis:
# Identifying and understanding stakeholders

- **Who has an interest or can influence or be affected by the changes or requirements? Below are some questions to consider when analysing the impact of new changes.**
  - Who is the new change and business transformation going to affect (who all will be impacted?)?
  - Who and how are you going to communicate these changes/requirements to the stakeholders? What is the communications plan?
  - Who are critical to this business transformation? Who can influence?
  - Who is paying for the project?
  - Who will be managing, reviewing and signing off?

**Note:** Please watch "Workshop Videos 1 and 2" available on uts online to identify and understand the stakeholders.

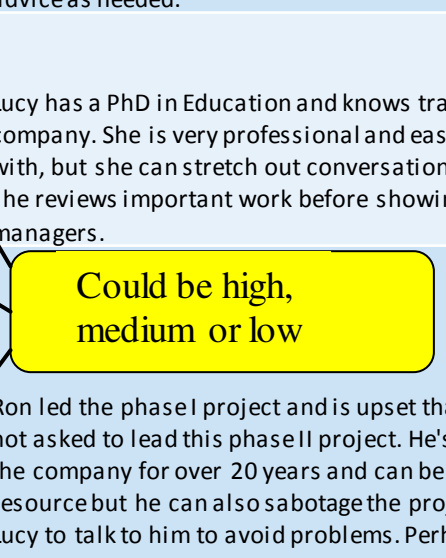
- **Stakeholders analysis techniques:**
  - **Technique1:** stakeholders list/map/register and
  - **Technique2:** empathy map

# Stakeholders Analysis: **Why do it?**

- Stakeholder analysis involves identifying all the relevant stakeholders and understanding their needs (and any issues with current system).
- Stakeholder analysis is the review and consideration of the **impact** stakeholders have on your business. Companies need to understand the **interests** of each stakeholder.
- To **understand the importance and influence of individual stakeholders** on the project.
- To utilise the vast amount of information and knowledge that stakeholders hold to find workable, efficient and sustainable solutions.
- **To Gain support** from powerful stakeholders which can help you to win more resources – this makes it more likely that your projects will have less obstacles and conflicts and hence be successful.

# Stakeholders Analysis Technique 1: Stakeholders Map/Register

| | Position | Project Role | Contact Information | Level of Interest | Level of Influence | Potential Management Strategies |
|---|---|---|---|---|---|---|
| Mike Sundby | VP of HR | Project Champion | msundy@globalconstruction.com | High | High | Mike is very outgoing and visionary. Great traits for a project champion. He is concerned about financials and has an MBA. Keep him informed and ask for his advice as needed. |
| Lucy Camerena | Training Director | Project Sponsor | lcamerena@globalconstruction.com | High | High | Lucy has a PhD in Education and knows training at this company. She is very professional and easy to work with, but she can stretch out conversations. Make sure she reviews important work before showing it to other managers. |
| Ron Ryan | Senior HR staff member | Led the Phase I project | rryan@globalconstruction.com | Medium | Medium | Ron led the phase I project and is upset that he was not asked to lead this phase II project. He's been with the company for over 20 years and can be a good resource but he can also sabotage the project. Ask Lucy to talk to him to avoid problems. Perhaps give him a small consulting role on the project. |
| Xxx Yyyy | | | | | | |
| Yyy Zzz | | | | | | |




Source: https://www.youtube.com/watch?v=BkUCcJwwvAQ&t=373s

This document should not be circulated to every team member as it contains sensitive information.

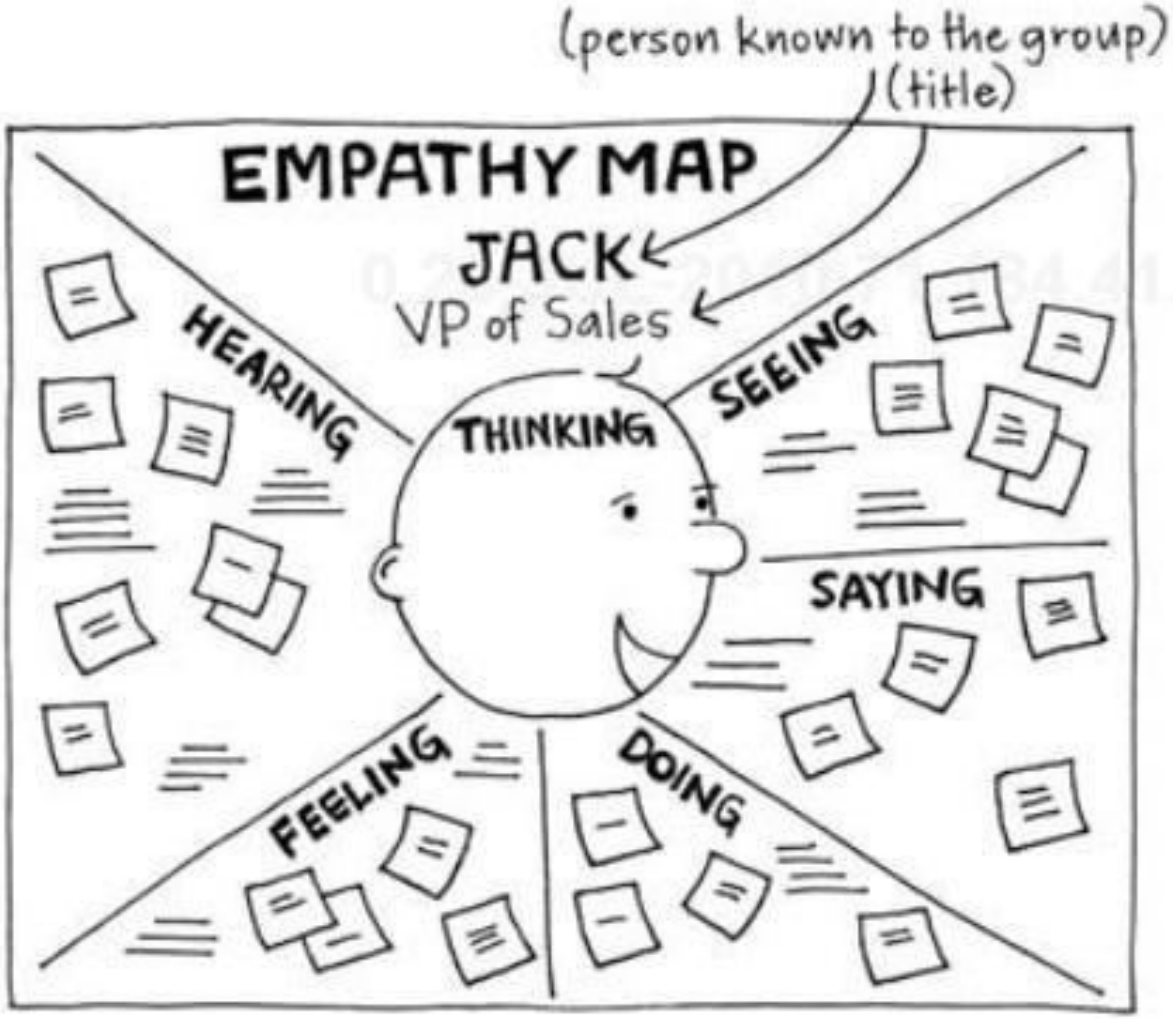
# Stakeholders Analysis Technique 2: **Empathy Map**

- An empathy map is a collaborative tool teams can use to gain a **deeper insight into their customers**. It is used to understand what is it that motivates the client (or a particular key stakeholder).
- Empathy Mapping helps us consider **how other people are thinking and feeling** (about this new system/process). An empathy map is a collaborative tool that **puts us in the shoes of our clients.**
- An empathy map consists of a simple face surrounded by six sections:

  1. Think & Feel
  2. Hear
  3. See
  4. Say & Do
  5. Pain
  6. Gain

- Empathy maps can be used whenever you find a need **to immerse yourself in a user's environment** and try to understand as to what does that user/stakeholder think about the new system**.**

# Stakeholders Analysis Technique2: **Empathy Map**




Source: http://www.cooper.com/journal/2014/05/persona-empathy-mapping

# Stakeholders Analysis Technique2: **Empathy Map**


Source: https://www.mindtools.com/pages/article/empathy-mapping.htm

# What do we want from users? (home work)

- What?
  - Understand their problems – what is limiting them?
  - Understand the requirements of the current and future system
  - Understand the scope
  - Understand the requirements priority

# Conflicts and Challenges (home work)

- Why are there conflicts?
  - Empires, power and fear
- Why are there differences between stakeholders?
  - Different views, time-frames, granularity, experiences
- What influences these differences?
  - Communication, Openness

# Understanding Conflicts (home work)

- Stakeholders may have **differing or conflicting requirements**
- Not understanding stakeholder differences can lead to
  - Poor communication
  - Miscommunication
  - Conflicts and failed software projects
- Unless there is understanding of what causes the conflicts, it is very difficult to determine appropriate **trade-offs**
- **Facilitate communication** between the stakeholders who are in conflict over the requirement in order to resolve the issue.
- Conflicts may be resolved through **formal meetings** among affected stakeholders, through research, resolution by a third party, or other methods as appropriate.
  - Source: BABOK guide

# Summary

- System Development Process
- Requirements Process
- Stakeholders Analysis

- **Take Away Message**
  - You need to have sufficient understanding of "what" to build before figuring out exactly "how" to build it…
  - You need to identify all relevant stakeholders and communicate with them to learn what to build.

# Conclusion

- This Week's Workshop:
  - **Quiz 0 – Practice Quiz: What is BRM?**
  - Tasks - Requirements Process

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- Next Week's Lecture:
  - Requirements Elicitation

- Next Week's Workshop:
  - **Quiz 1 - Requirements Process (3 marks)**
  - Tasks - Requirements Elicitation