MIS: Special topics

Professor Courtney Minich

Hello x Day 2

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Day 1 Review

1. What does analysis mean? Synthesis?
2. What does a business analyst do?
3. Who is a project sponsor?
4. What does SME stand for?
5. What is the purpose of a business objective?
6. What does COBIT stand for?
7. What does COSO stand for?

Business Rules

30 minutes

Business Rules

- Business rules dictate what business activity should occur under which circumstances.
- A formal business rule is composed of two fundamental elements:
  - A *condition*, which outlines the situation in which action should occur.
  - An *action*, which defines the thing that should happen in response to a given condition.

Business Rules

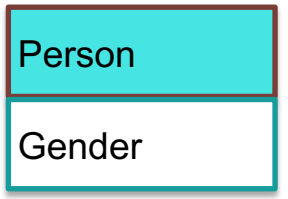
1. Business rules are easy for both technical and non-technical people to understand.
2. Business rules are declarative.
3. Business rules "fire" or they do not.

Business Rule Format

- Textual statement that defines the rule exactly and unambiguously
- Each rule has a unique identifier (ex. BR125)
- Usually documented or managed in a separate catalogue or table

Business Rules in various formats

BR-1 A person will use the bathroom that matches their gender



Visual

Written

Data

How do you write a business rule?

TERM- FACT- TERM2

Business Rule Examples

- Term- fact- term
- BR1: Customer calls must be returned on the same day.
- BR2: Expected contract value is calculated as the probability of signing the contract multiplied by the value of the contract.
- BR3: All accounting records must be reconciled within 60 days of receipt.

When writing business rules...

You want to be clear and direct. Do not use **“if/then”** as it may obscure the subject of the business rule

Which is a clear statement?

- If the order is shipped, then we will send the notification.

- Notification must be sent when an order is shipped.

Types of Business Rules

- **Restriction** – must or must not happen
  - An order must not have more than one ship-to address.
- **Heuristics** – guidance on how to do something
  - A customer is delinquent when their account is more than 30 days past due.
- **Inference** – given a condition, assume other conditions
  - A generic version of a prescription drug will be used when one exists.
- **Timing** – activity based on elapsed time
  - Each open compliant must be deleted when the root cause is identified.
- **Triggers** – cause and effect relationship
  - The product ship date must be agreed when an order is taken.

Individual Activity

- Spend 15 minutes writing five (5) examples of business rules from your common knowledge:
  - Restriction – must or must not happen
  - Heuristics – guidance on how to do something
  - Inference – given a condition, assume other conditions
  - Timing – activity based on elapsed time
  - Triggers – cause and effect relationship

What about when business rules are more complex?

We can create something called a decision tree.

Decision Tree to predict which students will pass the exam

Root Node

Hours of Study

Decision based on numerical value 'hours of study'

<2

2-6

>6

Decision Node

Fail

Hours of Sleep

Hours of Sleep

<6

>6

<3

>3

Decision Based on a category 'Previous Grade'

Previous Grade

Pass

Fail

Pass

Fail

Fail

Pass

Pass

Leaf Nodes

Decision trees

- Help the business analyst document the different pathways
- Creates a visual map of a rule to be created
- Not considered "official" business documentation, but can be stored for future reference

Business rules are defined rules for the business. But what about a specific project?

- We gather specific information about a project and the guidelines of the current process. These are called **business requirements.**

- **The process of gathering business requirements is called requirements gathering.**

The first step in requirements gathering is called elicitation.

Elicitation

- To draw, bring out or forth, educe, evoke, or elicit the truth
- To elicit a response with a question
- This is important for a business analyst, but it is critical for an auditor.

Why is this important?

Elicitation requires a combination of analytical skill, communication skill, and organization skill.

Requirements elicitation

- This is a core activity in the pre-planning of a project
- It is done to understand the real needs of the problem and not just what people think the real need is

How does a business analyst elicit requirements?

- There are a number of ways to elicit requirements.
- The important factor is to remember the goal is to accurately capture a business' **current** workflow.
  - Why not the future workflow?
    - The future workflow is the solution.

Elicitation Techniques

1. Reviewing existing documentation
2. Observation
3. Interviews
4. Surveys and questionnaires
5. Facilitated sessions
6. Focus groups
7. Competitive analysis
8. Interface analysis

- **Review existing documentation**

This involves analyzing existing materials such as user manuals, design specifications, help files, and previous system requirements to gain insight into the current system's functionality and interfaces.

  - Gather all available documentation from stakeholders.
  - Extract information related to UI layout, user flows, system behavior, and pain points.
  - Use this as a baseline to compare against user feedback and current system usage.

- **Observation**

Directly watching users interact with the system in their natural work environment.

- Conduct contextual inquiries or shadowing sessions.
- Take notes on user behavior, navigation paths, and difficulties.
- Combine with screen recording tools or usability testing sessions for analysis.

- **Interviews**

One-on-one or small group conversations with users or stakeholders to collect detailed feedback.

  - Prepare a semi-structured list of questions focusing on UI experience.
  - Interview various user types (novice, power users, admin, etc.).
  - Record and analyze the data to detect patterns.

- **Surveys & questionnaires**

Structured forms distributed to a larger audience to gather quantitative and qualitative data.

  - Design questions to target UI aspects such as layout, ease of use, and navigation.
  - Distribute electronically using tools like Google Forms or SurveyMonkey.
  - Analyze aggregated results to guide UI redesign.

- **Facilitated sessions**

Collaborative workshops with stakeholders, designers, and developers to define or refine UI requirements.

  - Plan interactive sessions such as design sprints or journey mapping.
  - Use whiteboards, mockup tools, or prototyping software.
  - Document agreed-upon requirements and features in real-time.

- **Focus Groups**

Structured group discussions with selected users to gather opinions, perceptions, and suggestions.

  - Recruit users that represent key segments of your target audience.
  - Moderate a guided discussion with specific UI-related questions.
  - Record sessions and analyze common themes or divergent views.

- **Competitive analysis**

Evaluating competitor products or systems to identify best practices, strengths, and weaknesses.

  - Analyze competitor systems' user interfaces (manually or using UX analysis tools).
  - Compare features, workflows, and user feedback.
  - Document what works well and what to avoid.

- **Interface analysis**

Interface analysis is the process of identifying and examining the points of interaction between users and a system, or between multiple systems or components. This helps define how data is exchanged and how users interact with software applications. It is a critical part of requirements elicitation and system design, especially for ensuring usability, efficiency, and seamless integration.

- **Identify all interfaces**: These include user interfaces (UI), system-to-system interfaces, device interfaces, and manual interfaces (e.g., printed forms).
- **Describe interface characteristics**: Document data formats, input/output behavior, interaction methods, access control, and error handling.
- **Collaborate with stakeholders**: Engage users, developers, system architects, and third-party vendors to fully understand all integration and interaction points.
- **Model interfaces**: Use diagrams such as context diagrams, data flow diagrams (DFDs), or sequence diagrams to represent how interactions occur.
- **Assess usability and performance**: Ensure the UI supports user needs, and that system interfaces are robust, secure, and efficient.

Which is the most effective?

Interviewing people live

- “Live”= an actual session between you and the other person
- An interview if a formal consultation, usually to evaluate qualifications
  - Can you think of a time you have interviewed before?

How to interview

- Saffer’s 3 Rules of Doing Design Research
  - You go to them
  - You talk to them
  - You write it down

Rule#1

You go **to** them.

Why? **Trust**.

Rule#2

You **talk** to them.

Interviewing tips

- Prepare questions in advance
  - What do you want to know? Who is best able to tell you?
    - Executives – Can usually tell you why?
    - Managers – Can usually tell who? where? And what? Workers – Are usually the only ones who can tell you how?
- Ask open ended questions
- Ask follow-up questions using the “reflect” technique

Active listening

- How do you show that you are listening?
  - Asking following up questions
  - Eye contact
  - General body language

Follow-up questions

Clarification	What do you mean by ____? Could you put that another way? Can you give me an examples?
Probing Assumptions	What are you assuming? How did you choose those assumptions? What could we assume instead?
Probing Reasons and Evidence	How do you know? Why do you think that is true? What would change your mind?
Viewpoint and Perspectives	What are you implying by that? What effect would that have? What is an alternative?
Probing Implications and Consequences	How can we find out? Why is this issue important? What generalizations can you make?
Questions about Questions	What does that mean? What was the point of this question? Why do you think I asked this question?

Rule#3

You write it down as it is described.

Taking notes

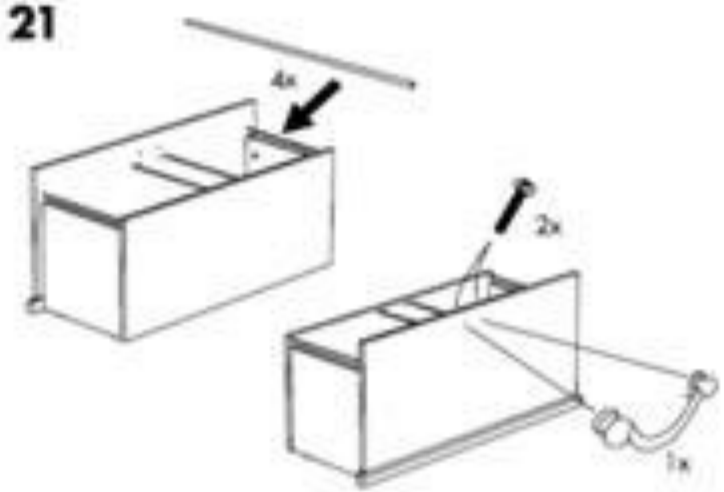
- Best practices:
  - Prepare questions in advance
  - Take brief notes on comments people make
  - If something seems important, highlight it
  - Review your notes in a quiet place
  - Add observations, conclusions, ideas in a separate color

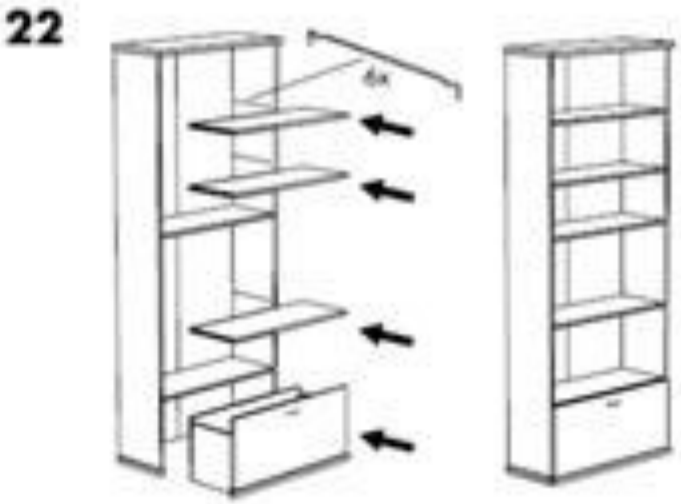
Documenting the process

What are the core components of requirements?

- People + process
- Now we need to document and understand *how* people do their work

What does this describe?





Workflow diagram

A visual representation of a process or sequence of tasks, showing how workflows from one step to the next. It outlines the activities, decision points, inputs, outputs, and responsible parties involved in completing a business process or system function.

- One of a Business Analyst's key tools, especially for analyzing the as-is situation
- Great way to begin to understand the process you are dealing with at high level
- Different levels of workflow can be used to explain the process to different audiences
- Can document Standard Operating Procedures (SOP's)
- Revising the flow to facilitate improvements is standard design technique

Class example: tea

- 2 volunteers

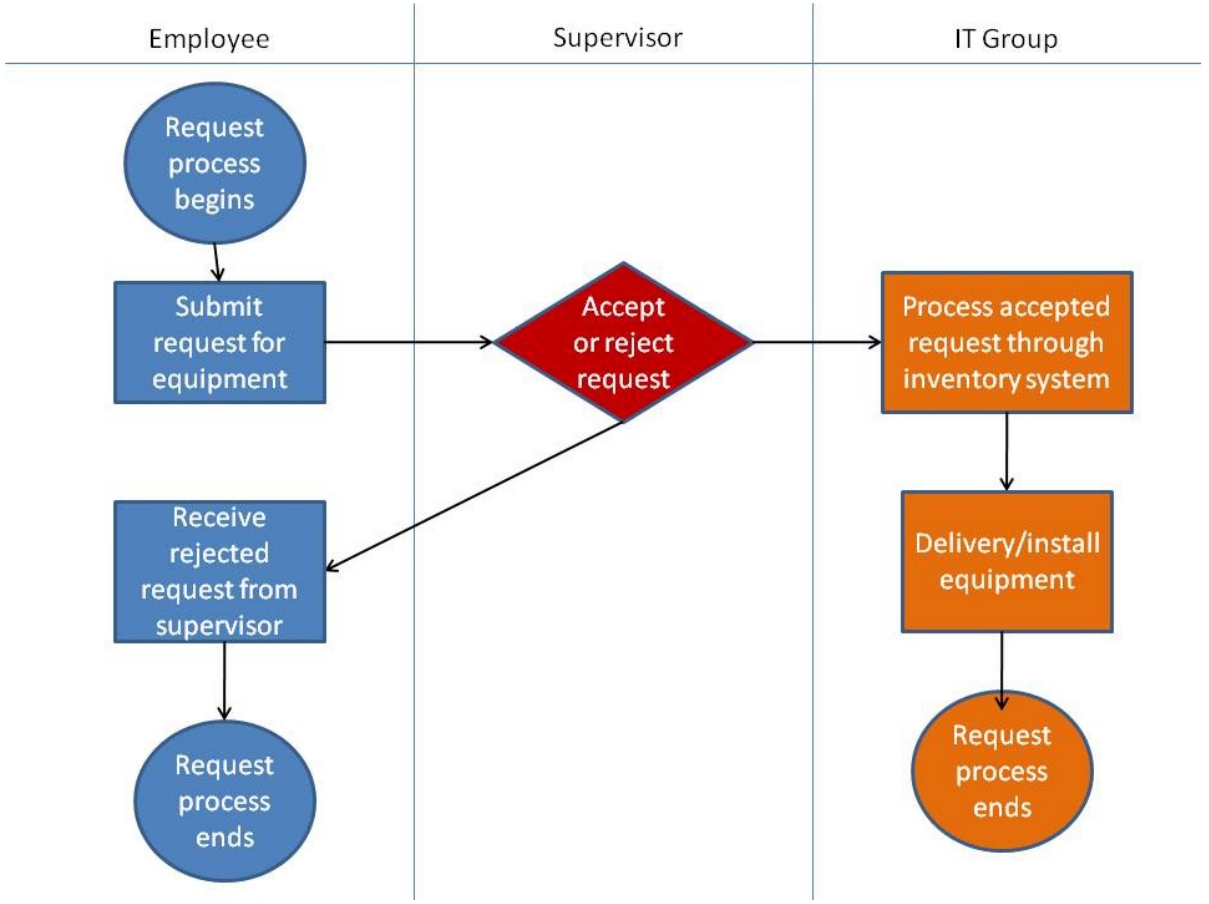
- Professor Minich will ask 1 student a question about tea. The other student will document the process.

Swimlane diagrams

Swimlane diagrams

Advantages of a swimlane diagram:

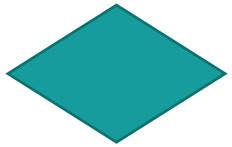
- Identifies who does what & in what order
  - Logical & Chronological
  - Indicates hand-offs
- Versatile
  - Applied to other diagrams
  - Training tool



Symbols

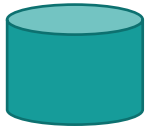
A circle signifies the starting and ending of an event in the process

A rectangle represents an activity in the process.



A diamond represents a decision that must be made.

Arrows indicate the flow of the process.



A cylinder represents stored data.

Actor

Actor represents a person, role, system, or department that participates in a process. Swimlane diagrams are a type of flowchart where each lane (horizontal or vertical) is assigned to a specific actor. The diagram shows how different actors interact with various steps in a workflow.

- Maple Grove Manufacturing is a mid-sized company that produces machine parts. The accounting department still relies on a **paper-based invoice approval process**. This system has been in place for over 15 years and is now causing **delays, errors, and frustration** across departments.
- The CFO has tasked the business analyst team with reviewing the current process and proposing a streamlined, digital solution.

Current process:

1. **Vendor sends paper invoice** via postal mail or email attachment.
2. **AP Clerk prints** emailed invoices and attaches them to a physical folder.
3. **AP Clerk logs** the invoice in an Excel spreadsheet.
4. **Invoice folder is hand-delivered** to the relevant department manager.
5. **Manager reviews** and signs the paper invoice.
6. **Folder is returned** to the AP department (sometimes delayed for days).
7. **Finance Director signs** the invoice for final approval.
8. **AP Clerk processes payment** manually via bank software.

- **Problems Identified:**
- Delayed approvals due to physical handoffs.
- Invoices frequently lost or misplaced.
- No centralized tracking of invoice status.
- High risk of duplicate payments.
- Difficult to audit or generate reports.

Proposed solution:

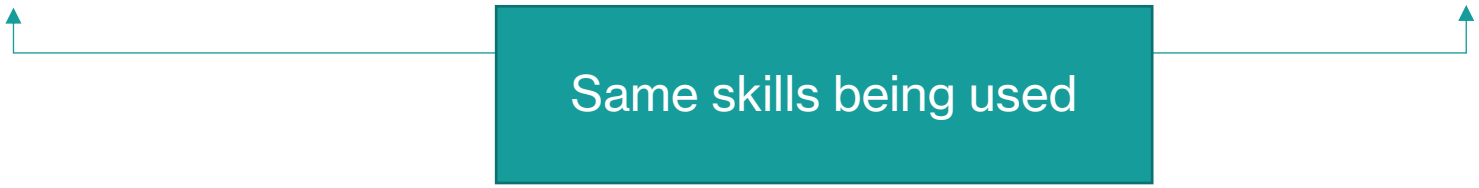
Steps (New Process):

1. **Vendor uploads invoice** directly to the invoice portal.
2. **System automatically logs** and assigns invoice to AP queue.
3. **AP Clerk reviews** and tags the correct department.
4. **Department Manager receives email notification**, reviews digitally, and approves in system.
5. **System routes to Finance Director** automatically for final approval.
6. **Once approved**, payment is scheduled and processed within the system.
7. **System updates records**, sends confirmation to vendor, and logs the transaction for audit.

Analytical skills

- **Beginning of the cycle:**
  - Business analysis
  - Requirements gathering

- **Monitoring the cycle:**
  - IT auditors
  - Requirements gathering & monitoring



Business Controls

- Controls are defined as the policies, procedures, practices and organizational structures designed to provide reasonable assurance that business objectives will be achieved and undesired events will be prevented.

IT Controls

- They are specific activities performed by a person or system that have been designed to prevent or detect the occurrence of a risk that could threaten your information technology infrastructure and supported business applications.
- IT controls are generally grouped into two broad categories:
  - • General controls commonly include controls over data center operations, system software acquisition and maintenance, logical security, and application system development and maintenance.
  - • Application controls such as computer matching and edit checks are programmed steps within application software; they are designed to help ensure the completeness and accuracy of transaction processing, authorization, and validity.

Management's use of controls

- Controls are put in place to ensure that the Processes, Standards and Guidelines are being followed.
- Therefore, they help mitigate the risk that undesired outcomes will occur. These risks are call the control objectives
- Types of controls:
  - Preventative: tries to avoid a risk or lessen its impact
  - Detective: discovers that a risk has occurred and needs to be addressed
  - Corrective: takes action to eliminate the problem and restore the environment

  - Controls are usually used in combination. This is called layered controls or **defense in depth.**

Hierarchy of IT Controls

COSO Framework

- Control framework:
  1. Risk Assessment
  2. Control Activities
  3. Information & Communication
  4. Control Environment
  5. Monitoring Activities

Risk Assessment

All organizations have risks and are exposed to factors that cause them not to reach their objectives. Risk assessments are performed to evaluate internal and external factors. Assessments provide reasonable assurance that organizations are managing risks to an acceptable tolerance.

Control Activities

Control activities are taken to mitigate risk at all levels of the organization. The COSO framework helps to assure that the control activities performed by organization members are effective for the company to achieve its goals and eliminate unnecessary risks.

Information & Communication

The controls provided by COSO help assure that productive communication occurs. This includes using consistent language and following best practices for sharing appropriate levels of information with the right stakeholders. Formal management business reviews and all-employee meetings, as well as informal chats and emails, fall under this component.

Control Environment

The control environment creates a top-down approach to drive the COSO Framework throughout the organization. It consists of a set of standards, processes, and procedures which are overseen and enforced by management. Establishing controls across the environment assures that standard practices and ethical values are used throughout the organization.

Monitoring Activities

Ongoing monitoring and internal audits of all internal control systems identify early signs of trouble and assure effectiveness. Metrics and reports are provided to management and the board of directors for ongoing evaluation. Information gathered and evaluated by regulators and auditors verify control activities. Audits of financial reporting also help with fraud deterrence.

Implementing the COSO Framework

1. Understand and learn the framework
2. Develop a plan
3. Assess the plan’s success and get buy in
4. Remediation
5. Test, Inform, and Optimize

Ongoing monitoring & auditing

- Management should monitor their controls to see if the desired behavior is being realized.
- Audits examine the sufficiency and effectiveness of the controls that an organizations has put in place.

How do organizations set process controls up?

- Identify the process in question and its limits.
- Identify the process' expected outcomes and risks
- Assure/avoid any unnecessary objectives
- Look for evidence to monitor the success of the controls

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