SER 415 - Midterm

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Requirements	Descriptions of the system SERVICES and CONSTRAINTS that are generated during the requirements engineering process
Phases of Requirements Engineering	Elicitation Analysis Validation Change Management
Requirements Elicitation is sometimes called _______ or _______	discovery or gathering
Stakeholders	End-users, managers, engineers involved in maintainance, domain experts, trade unions, etc
Requirements Analysis	Translating requirements expressed as needs into software products. Provide a model to bridge the chasm between business stakeholders and implementers (e.g. design docs) Architecture Higher level design
Requirements Validation	Demonstrating that the requirements defined the system the customer really wants
Objectives with Inception	1. Understand what to build 2. Identify key requirements 3. Determine at least one potential solution 4. Understand costs, schedule, and risk 5. Understand what process to follow and tools to use
Objectives with Elaboration	1. Get a more detailed understanding or requirements 2. Design, Implement, validate and baseline the architecture

	3. Mitigate risks, produce more accurate schedule & cost estimates 4. Deployment and Development Environments
Needs	Problem or opportunity that must be addressed
Features	A service the system provides Identifiable but not implementable WHAT not HOW
5 Heuristics in Problem Analysis	1. Gain agreement on the problem definition 2. Understand the Root Causes 3. Identify Stakeholders and End Users 4. Define the Solution System Boundary 5. Identify Constraints
Functional Requirements	What the system does
Non-functional Requirements	How well the system does its thing Stipulations or constraints on the system
Types of non-functional requirements	Product Organizational External
Product requirement	The reqs we often think of. Reqs which specify that the delivered product must behave in a particular way e.g. execution speed, reliability, usability, etc.
Organizational requirement	Internal Stipulations Reqs which are a consequence of org policies and procedures.
	External Stipulations

External requirement	Reqs which arise from factors external to the system and its development process
User Requirements	Written for (and often with) customers Natural language Should describe functional and non-functional requirements so that they are understandable by system users who don't have detailed technical knowledge
System Requirements	More detailed specifications A structured doc setting out detailed descriptions of the system services
Requirements Elicitation Techniques	-Individual Interviews -Group Meetings -Prototyping -Questionnaires -Observation -Research
Individual Interviews	2-way communication process Time sensitive Could be user, buyer, or expert
Group Interviews	N-way communication Groups of customers, cross-functional teams, buyers, experts, focus groups etc. Semi-structured Cons: Group think
Prototyping	A structure for individual or group exploration Participants are end users

	Cons: Could push yourself into a corner early on
Questionnaires	1-way communication Possibly anonymous Cons: False answers, Answer options that are too limiting, answer options that are too broad
Observation	Watch real people in the domain Ethnography Cons: Observing can cause behavior to change
Research	0-way communication Finding and reading written info and artifacts
Use Case	Describes sequences of events between an actor and a system that yield a result of value to the actor A template for a collection of related scenarios
Use Case Specification (Parts)	Objective Primary Actor Trigger Secondary Actor(s) Pre/Post Conditions Scenarios (Success/Failure)
Actor	Defines a coherent set of roles that users of an entity can play when interacting with the entity Stick figure

A use case should focus on the users ________	GOAL (you should avoid functional decomposition)
Steps to create a use case	1. Identify and Describe the Actors 2. Identify the Use Cases and write a brief description 3. Identify Actor to Use Case relationships 4. Outline the Individual Use Cases 5. Refine the Use Cases 6. Verify & Validate the Use Cases
<<include>>	A stereotype of a dependency A -> B The behavior of B is ALWAYS included into A
<<extend>>	A stereotype of a dependency A <- B A possible extension, behavior of B may be incorporated into A
Generalization	B inherits the behavior and communication relationships of A and is allowed to override and extend B is generally a standalone basic use case Actors may apply Generalization as well A <- B e.g. Student <- Graduate Student

Analysis Modeling Techniques	Data/object Models Behavioral Models Flow Models
Data/object Models	* Entity-Relationship (ER) OOA&D Data Dictionaries
Behavioral Models	Use Case Models State Machines
Flow Models	Process/workflow Models * Dataflow Diagrams (DFD) * Sequence Diagrams * Activity Diagrams