Problem in RE:
- testable
- incomplete/complete
- vague/clear
- diff. POV
- consistent/abstract

Models
- agile) (water+
- incremental →quick • product at End
- —all RE not known
- —integration

Spiral
- ·large scale
- ·mission critical ·cost
- ·client review
- —time
- design / RE Ana. / code / Risk

V-Model
- Verify: RE Ana., Func., H. Design, L. Design, Code
- Valid (Testing): User accept, System, Integration, Unit
- RAD: 3 Month, template, expert, client not available, budget

RUP (Rational Unified)
- ·inception ·Elaboration
- ·construction ·transition
- ·large ·many usecases
- ·review & controlled ·cost

Scrum (1-4 week-sprint)
- client available ·new stack
- user stories (5-15 per person)

RE
- Elicitation
- Analysis
- Specification
- Validation

bad RE:
- ·Creeping
- ·gold plate
- ·client involvement
- ·inaccurate planning
- ·overlooked stakeholder
- ·Ambiguous RE

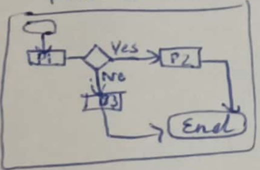
Elicit Techs:–
- **Brainstorm:** Formal ↑creativity↓
  - —focus on wrong, Robert Rule of Order
- **Card Sort:** time allowed? (missing)
- **Designer as Apprentice:**
- **Domain Ana:** (QFD)
  - technical project RE
  - ·research ·essential missing RE
  - ·identify reusable components
  - ·competition
- **Ethnographic Obs.:** ·userclass
  - ·market segmentation
  - —time
- **Goal-based:** ·emanate from mission statement
  - goal question metric
- **group-Work:** ·meetings
  - ·(JAD) ·productive
  - —divisions & conflict
  - ·key is planning & execution
- **Interview:** (3) ·structured, ·Un ″, ·Semi ″
  - (Open/Closed)
- **Introspection:**
  - ·what dev. thinks ·when eng. RE eng. expert more than client (domain know)
- **JAD:** ·structured meeting over specific set
  - ·4-8 hr/per day from 1 day to weeks
  - ·3 step: a) select participant (sponsor, team lead, scribes, eng./dev, user, manager) b) prep agenda c) Select Location
- **Laddering:** follow-up Qs
- **Protocol ana.:** customer + RE eng → (procedure/walkthrough)
  - ·RE is passive vs apprentice
- **Prototyping:** ·new func.
  - ·in spiral + agile (non-throwaway)
  - ·to-scale/temp/codes/mocks
- **Scenerio:** ·high level description, (+exception)
  - for each user class / functionality
- **QFD:** (quality func. dep)
  - ·Relationship matrix b/w needs, technical RE, priorities → card sort + laddering + Domain Ana. → prioritize
  - ensure needs are heard & translate to technical RE

Elaborate Techs
- **Context:** (DFD) 1→dialogue b/w eng. & stakeholder
  - 2→combat scope creep
  - 3→RE agreement & ana. (complex, missing RE)
- ·arrow = noun phrase
- ·heritage identifier
- ·process can be verb

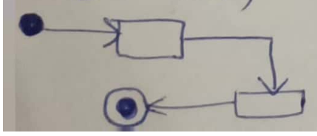
- ·not show process, only data flow
- primitive (can't be broken down)

Data Dict: ·lookup def
- ·when many eng on DFD

Swimlane: (one process)
- ·easy for stakeholders
- ·business process/workflow + interactions
- ·UML activity diagram
- ·cross-functional ″
- ·good starting point phases



State Transition
- ·state machine in UML (similar)



Elicit:
- ·RE? ·environment ·functionality
- ·objectives ·user/stake idea. understand

Ana.:
- ·decompose ·deeper understand
- ·derive FR ·richer/precise
- ·nego+prioritization ·get gaps

Specification: ·well organized ·diagrams docs

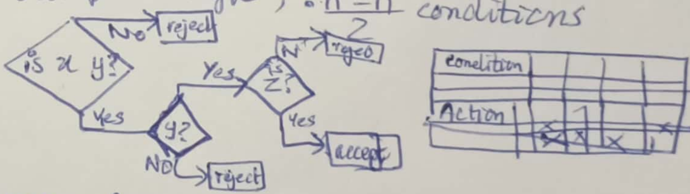
Valid: Review ·acceptance criteria ·Simulate RE

RE Steps
1) inception
2) Elicit
3) Elaborate + Ana.
4) Nego + prioritize
5) Specify
6) Valid
7) Manage

- **·Questionaires:** ·large sample (early stages) for scope/boundaries
  - ·Closed → bind scope
  - ·Open → freedom/innovation but harder to analyze + encourage creeps
- **·Repertory Grids:** ·Structured Rank
  - ·identify agreement/disagreements
  - ·all stakeholders should → same level
- **·Task Ana.:** ·func. decompose tasks to be performed
- **·Use Case:** ·for sophisticated customer/stakeholder
  - ·Use case from designer's/operation's POV
  - ·name is always → verb+
- **User Story:** As [role], I want to [action] so that [benefit].
  - (agile) → 5-15 stories per person per sprint
  - ·short use-case + rationale/aim + user class
  - ·initial RE discovery + planning
  - ·80 stories per increment
  - ·2-4 sentence on 3x5 inch card
- **·Viewpoints** **·Workshops:** (JAD)
  - ·formal → boring ·informal → false lost info ← security
- **·Persona:** to avoid Z
  - ·elastic user, self-refer design, edge cases
  - ·Many 2nd-ary = out of scope

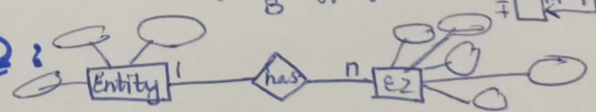
Elaborate Techs (2.0)

Decision Table/Tree: ·Text != all conditions so table ✓
- ·complex logic, ·$\frac{n^2-n}{2}$ conditions

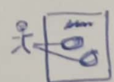


UML:
- A parent ↑ inherit (B knows A) B child
- A ↑ B association (B uses A)
- A ◆ B compose (A has/owns B) = A ◇ B aggregation
- 1 M

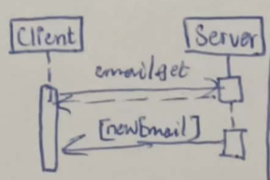
ERD:



UseCase Diagram: <<extend>> towards base case



Sequence: (event traces



Prototype
- Horizontal
- Vertical
- T-Prototype:
  - ·shallow design
  - ·depth feature
- Local Prototype:–
  - ·design alternative for each interaction model

CRC: one card per class