SENG 471
Software Requirements Engineering

Stakeholder's Goals
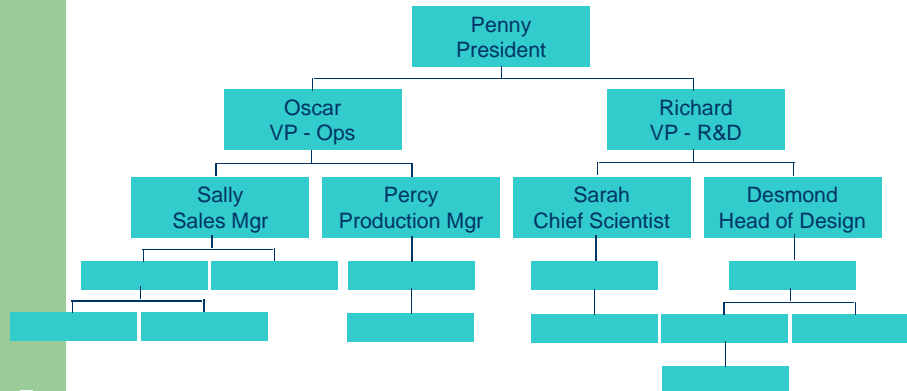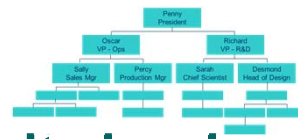

Requirements Elicitation

- **Which** problem needs to be solved? ⟶
- **Where** is the problem? ⟶
- **Whose** problem is it? ⟶
- **Why** does it need solving? ⟶
- **How** might a software system help? ⟶
- **When** does it need solving? ⟶
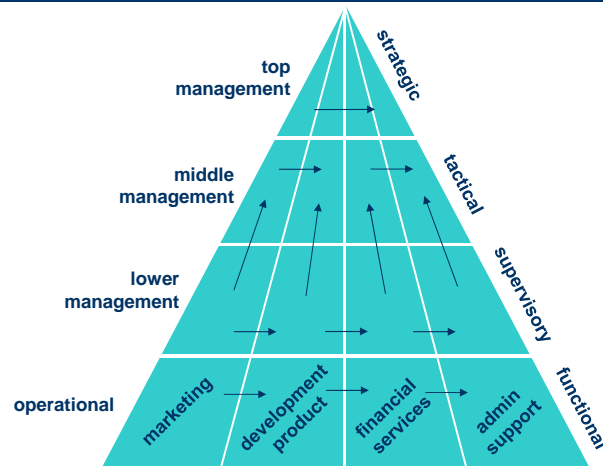- **What** might prevent from solving it? ⟶

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Stakeholders - Organization chart

```
                        Penny
                      President
              ┌───────────┴───────────┐
           Oscar                    Richard
          VP - Ops                  VP - R&D
        ┌────┴────┐            ┌───────┴───────┐
     Sally      Percy         Sarah          Desmond
   Sales Mgr  Production Mgr  Chief Scientist  Head of Design
```

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Stakeholders - Authority level

```
                    strategic
         top
      management

                            tactical
        middle
      management
                               supervisory
        lower
      management

   operational   marketing  development  financial  admin    functional
                            product      services   support
```
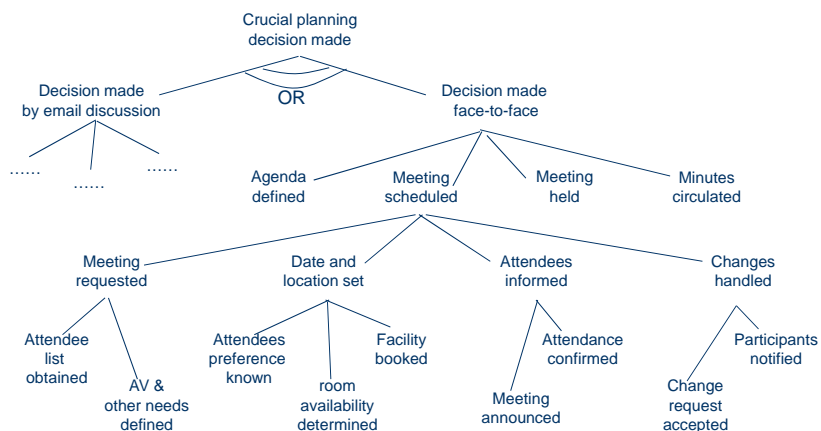
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Stakeholders' Goals

- Approach
  - Focus on why systems are constructed
  - Express the 'why' as a set of stakeholder goals
  - Use goal refinement to arrive at specific requirements
  - Goal analysis
  - Goal evolution
  - Goal hierarchies
- Focus on 'why' to derive goals
  - Advantages
  - Disadvantages

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"Why"   → higher goals (context)
"How"   → lower goals (operations)
"How else" → alternatives

Goal Analysis - Elaboration

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Goal Analysis - Scenarios

[Sut03]

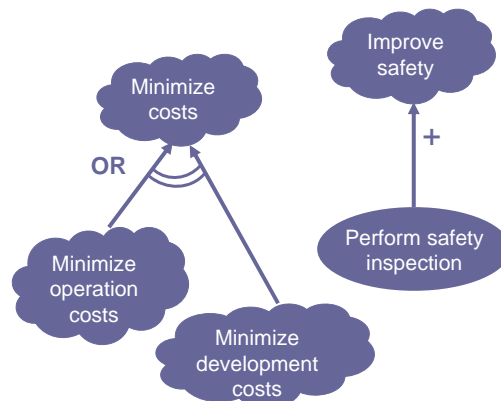| Title: Successful meeting scheduled using messaging option Participants: Alice (initiator, not attending); Bob, Carlo, Daphne (attendees)		
Scenarios	**Goals Satisfied**	**Obstacles / Problems**
Alice requests meeting, Specifying participants, timeframe	Meeting requested; Attendee list obtained	What if selected timeframe is infeasible?
Alice sends participants requests to Bob, Carlo, and Daphne	?	Did we miss a goal?
Bob reads message	Participants informed	Can't detect when messages are read; what happens if Bob reads the message but doesn't reply?
Carlo reads message		
Daphne reads message		
Bob replies with preferences	Attendees preferences known	What if the preferences are mutually exclusive? Would we allow some to be higher priority?
Carlo replies with preferences		
Daphne replies with preferences		
Alice schedules meeting	Room availability determined; room booked	
Alice notifies Alice, Bob, Carlo and Daphne of time and location	Meeting announced; Attendance confirmed (?)	How do we know if they've all read the announcement? What if the schedule is no longer convenient for one of them?

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Hard goals → Must be carried out

Soft goals →Difficult to be fully satisfied

Goal Modelling - Relationships

- Help (+, default)
- Hurt (-)
- Make (++)
- Break (--)
- Order (→)
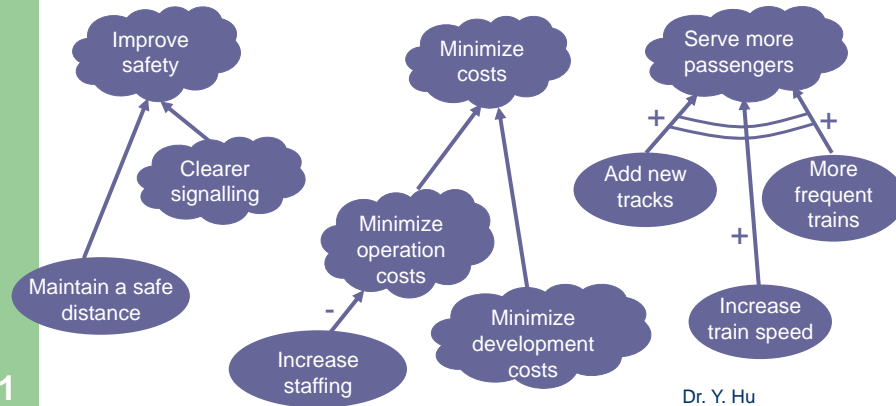- AND (default), OR

- Analyze obstacles

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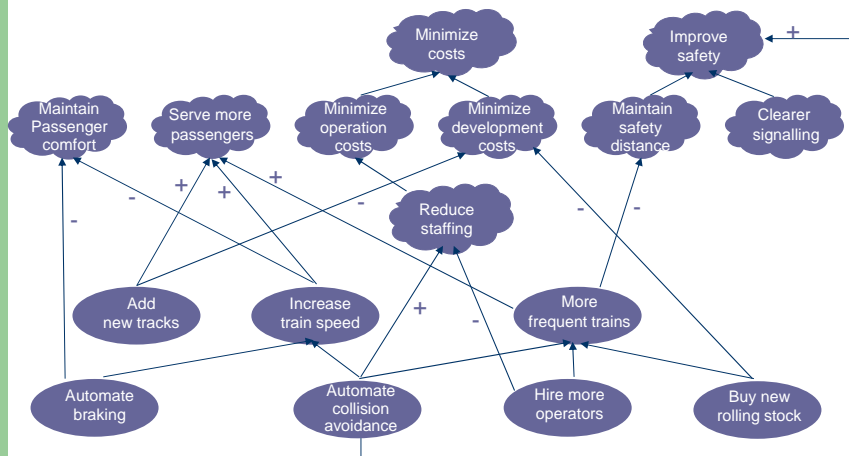Dr. Y. Hu

Goal Modelling - Example

- A train system

Improve safety

Minimize costs

Serve more passengers

Clearer signalling

Minimize operation costs

Add new tracks

More frequent trains

Maintain a safe distance

Minimize development costs

Increase train speed

Increase staffing

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Goal Modelling - Selection criteria

Minimize costs

Improve safety

Maintain Passenger comfort

Serve more passengers

Minimize operation costs

Minimize development costs

Maintain safety distance

Clearer signalling

Reduce staffing

Add new tracks

Increase train speed

More frequent trains

Automate braking

Automate collision avoidance

Hire more operators

Buy new rolling stock

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Stakeholders' Goal - Tips

- Use multiple sources, if possible
- Associate stakeholders with each goal
- Use scenarios
- Explicit consideration of obstacles

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Recap

- Stakeholder's goals
  - Part of requirements elicitation
  - Identifying stakeholders
  - Analysing goals
  - Modelling relationship among goals

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