Developing Effective Requirements

Software Analysis and Design

Class 06

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Requirement

- A Condition or Capability to which a system must conform
  - The Rational Unified Process by Phillipe Kruchten
- A Specification of what should be implemented
  - By Ian Sommerville
- Anything that drives design choices
  - By Brian Lawrence

Example

- A University Event Calendar

For Example we get the following Requirement

1. View university-wide events
2. Easy to use with no training or user manuals
3. Adoption rate ≥ 75% within one year
4. Web application; mobile app on Android and iOS
5. View event conflicts, if any
6. Auto-populate course timetables
7. Secure access through centralized authentication

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Business Req.

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External Interface Req.

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Functional Req.

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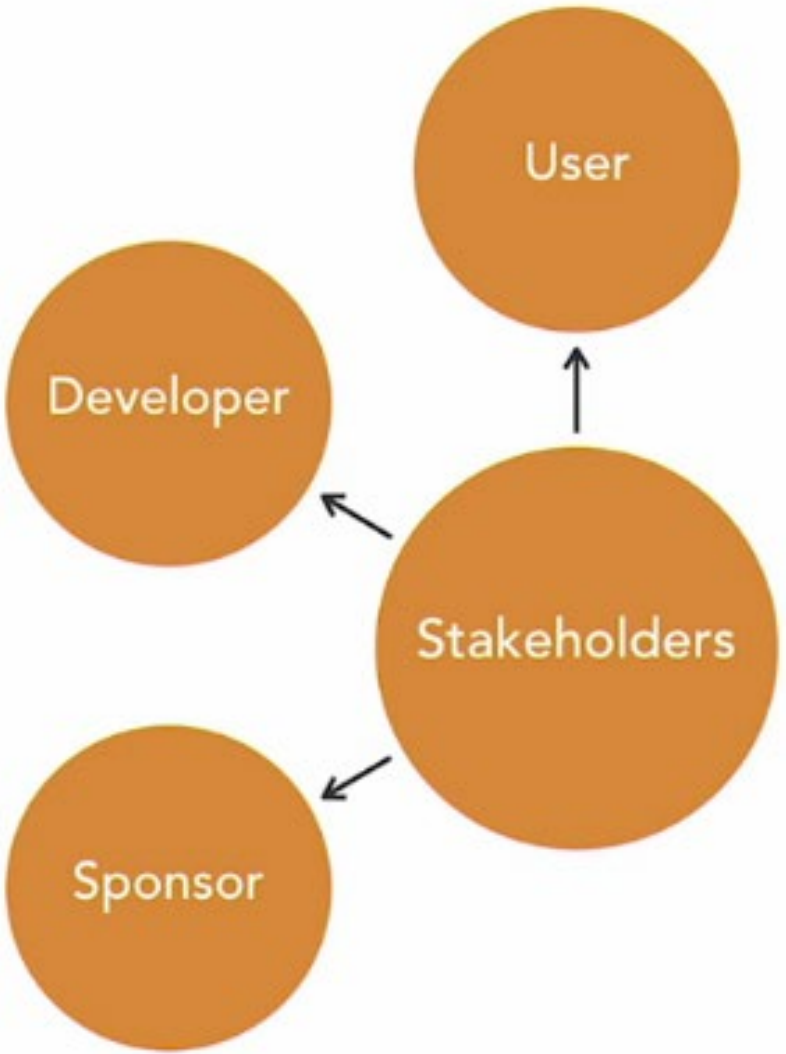
Nonfunctional Req.

Common way to get Requirement?

Whose Requirement?

- Who are the stakeholders?



Whose Requirement?

- Who are the stakeholders?

Understanding Requirement

Business requirement	**High-level objective:** improve student participation in university events
Business rule	**Policy, standard, regulation:** no events to be scheduled during class hours
Functional requirement	**System behavior:** system should generate event alerts
Nonfunctional requirement	**System characteristic "-ilities":** system should be easy to use
External interface requirement	**System integration:** system should get timetables from course scheduling system
Constraint	**Developer choices:** the GUI should be based on university's standard template

Requirement Activities

Requirement Development

- Elicit
- Specify
- Analyze
- Validate

Requirement Management

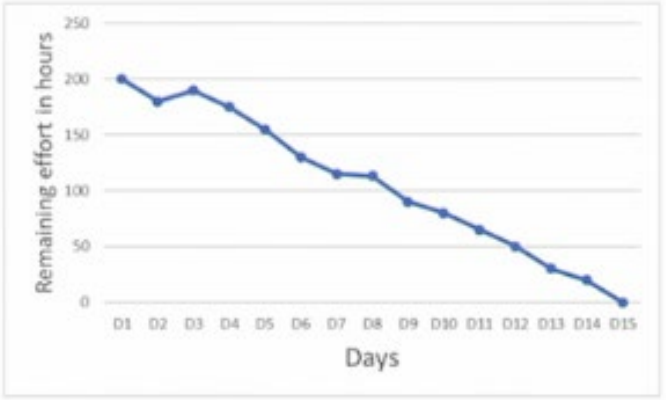
- Prioritize
- Estimate
- Schedule
- Track

Requirement Management in Scrum

Product Backlog

Planning Poker

Sprint Backlog



Burndown Chart

Prioritize → **Estimate** → **Schedule** → **Track**

Software Methodology Platforms

- All methodologies generate work items or artifacts
- Software methodology platforms offer tools and templates to create and manage these artifacts

Enterprise Agile Planning Tools

Process Frameworks

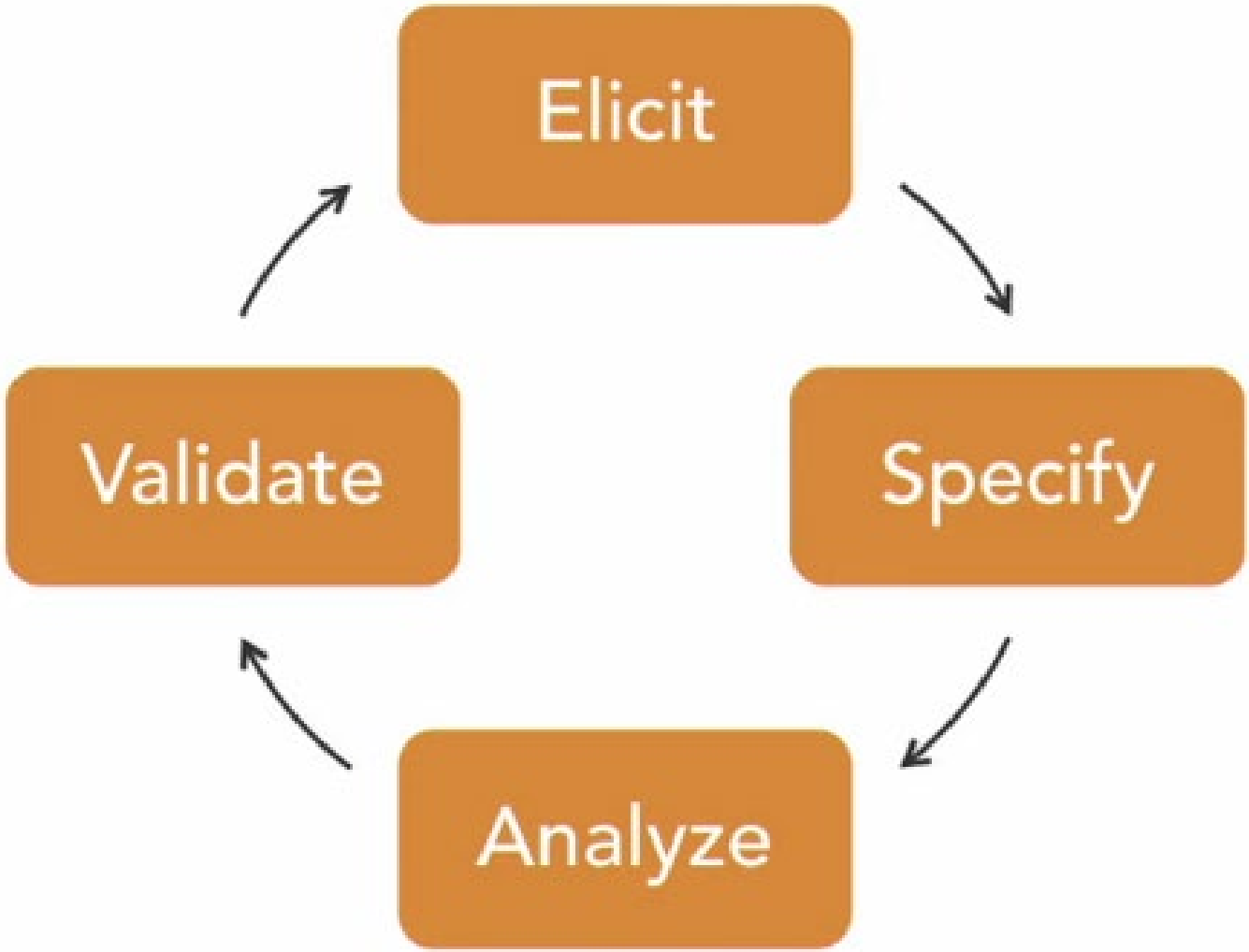
Microsoft

- Microsoft Solutions Framework (MSF)

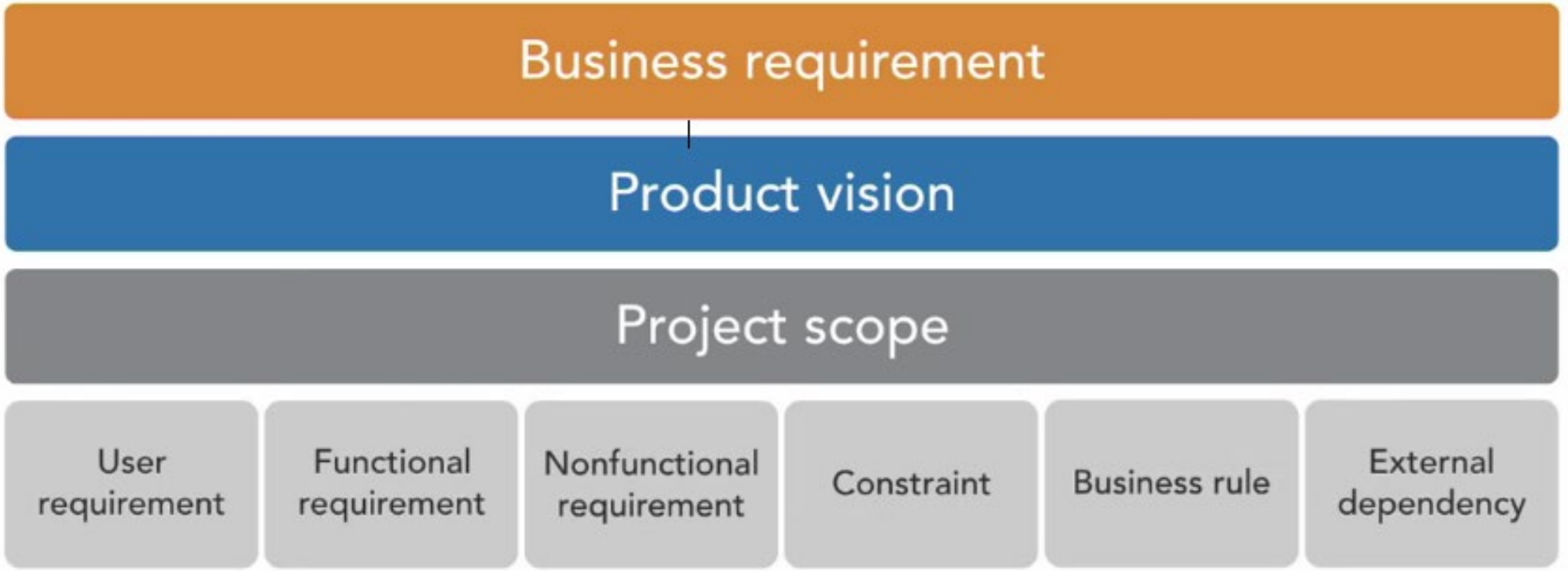
IBM

- Rational Unified Process (RUP) framework

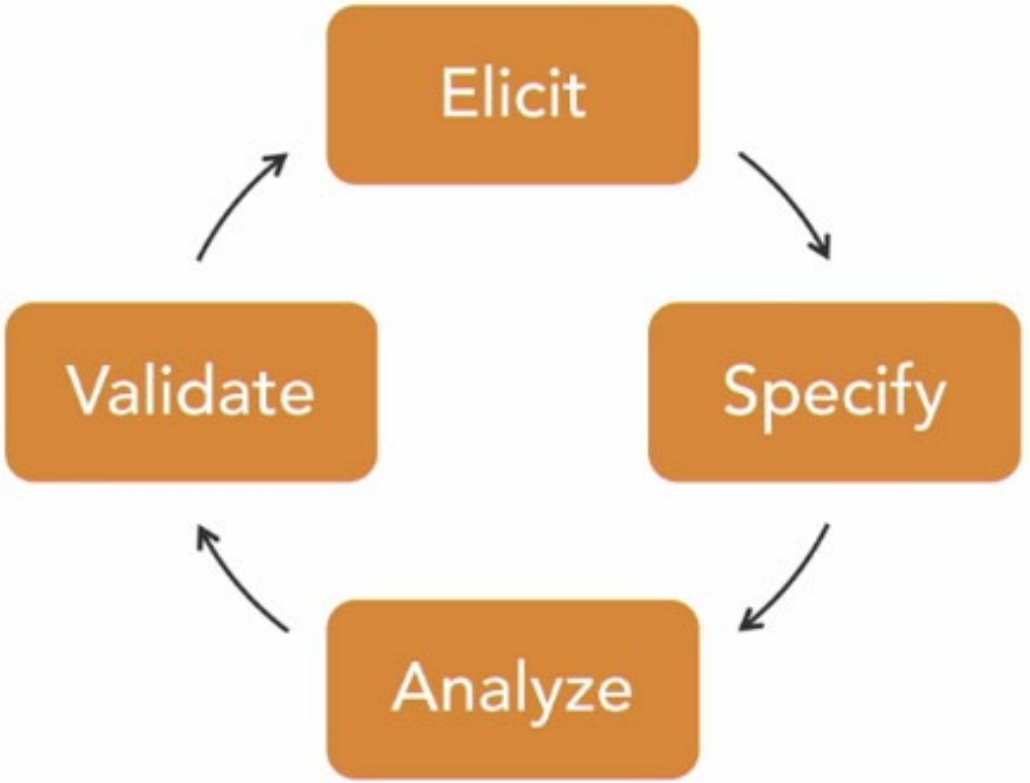
Requirement development means progressive elaboration of a system's properties that offer some value to its stakeholders.

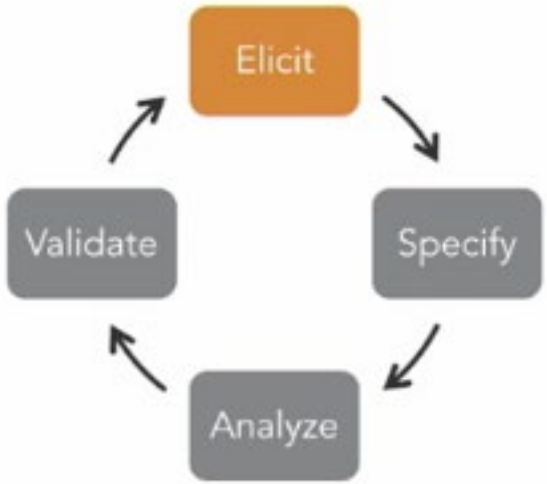

Elicit
Specify
Analyze
Validate

Levels of Requirements



Requirement Development Activities





Student

I need to know if the event clashes with my schedule.

Dean

I need to see a chart of student participation.

Professor

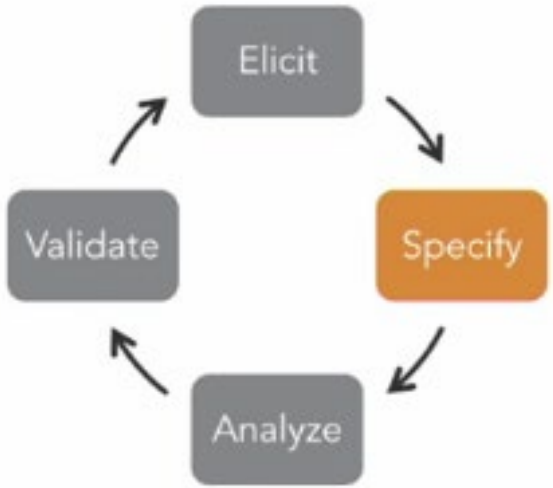
I need to schedule my office hours.

Admin

I need to give special access to staff members to schedule events.

Staff

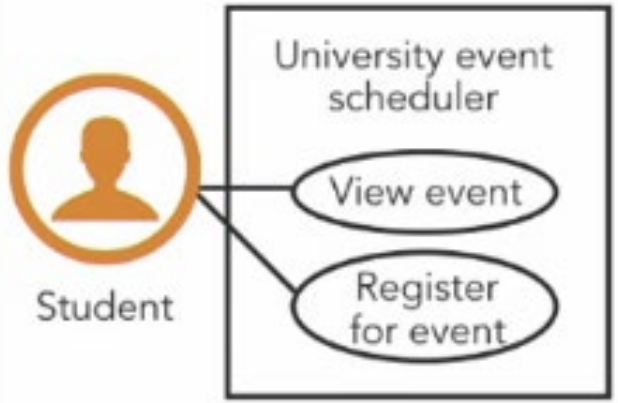
I need to schedule an event.



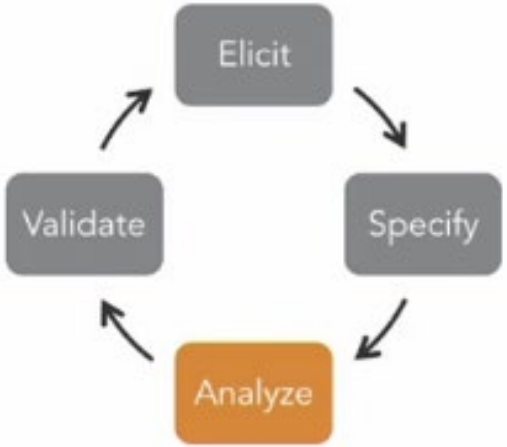
User Story

As a student, I want to see a list of events for today so that I may register for them.

Use Cases

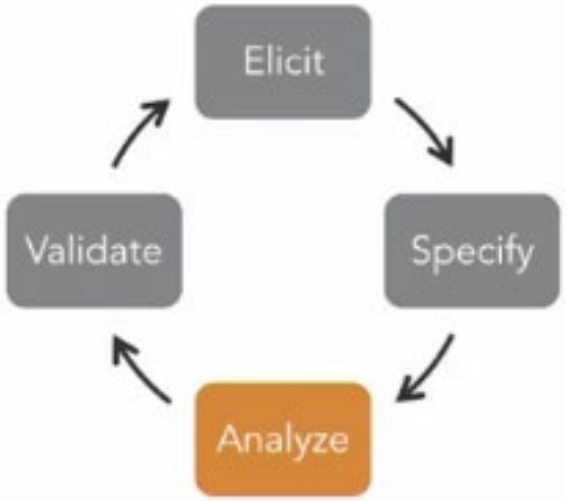


Use Case Specification
Title: view event
Primary actor: student
Precondition: …
Basic flow:
…

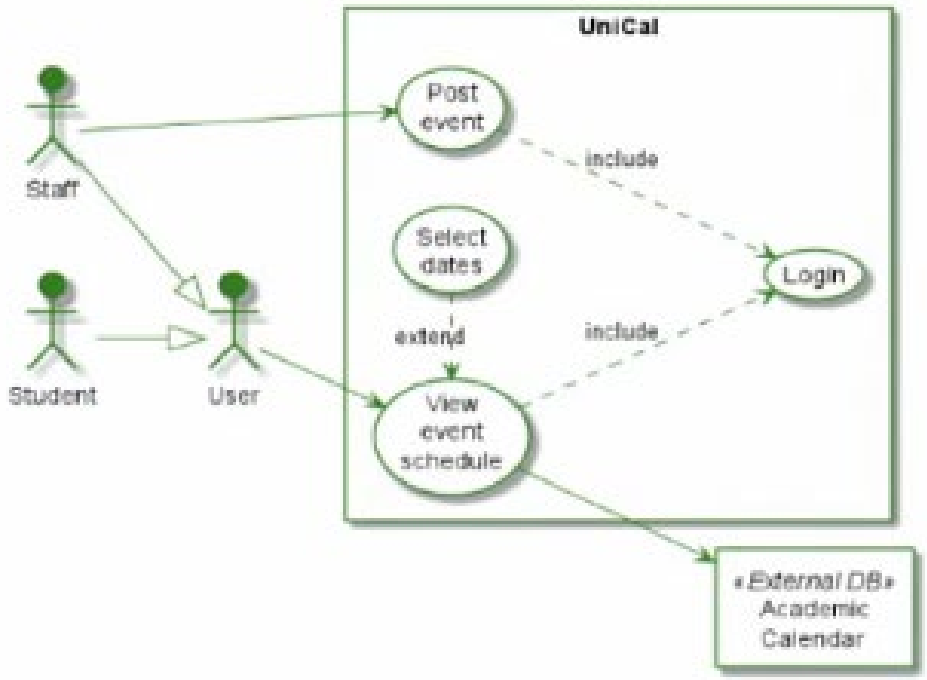


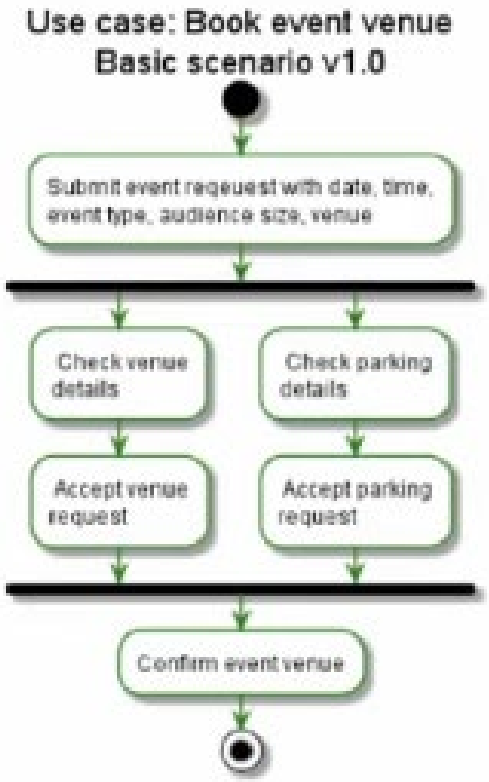
Requirement Analysis in Scrum

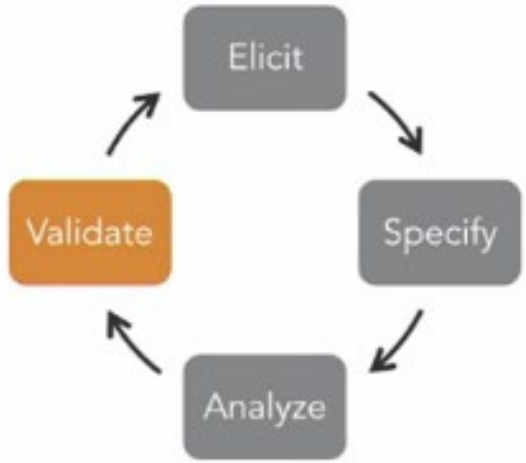
Manage event schedules	View events	Register for events	Generate alerts	Generate reports
As a scheduler, I want to see all open time slots in a time period	As a student, I want to view the events so that I may register for them	As a student, I want to see when registering for an event if it conflicts with another registered event	As a student, I want to receive alerts to let me know when new events are scheduled	As a scheduler, I want to see all open time slots in a time period
As a scheduler, I want to see the available venues for scheduling an event	As a student, I want to see how many other students have registered for an event		As a scheduler, I want to receive an alert if another event is scheduled that conflicts with my event	
As a scheduler, I want to see the available venues for scheduling an event			As a student, I want to receive an alert if event schedule is changed	



Requirement Analysis in Unified Process

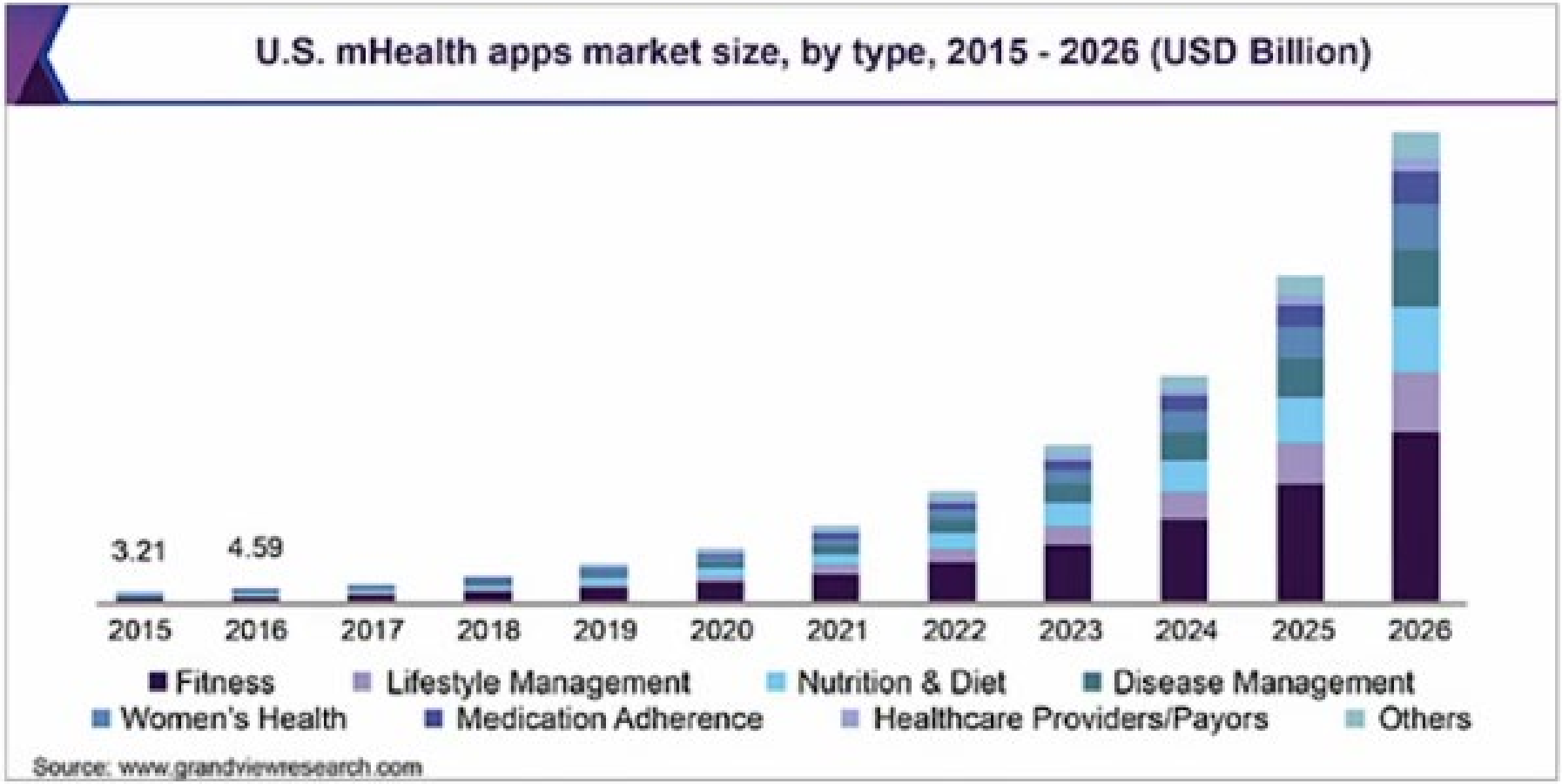






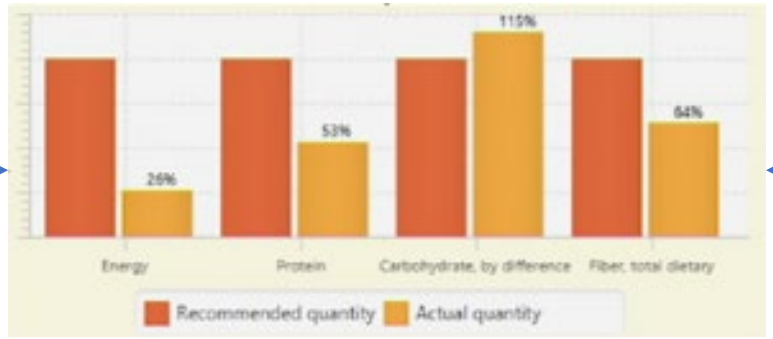
User feedback

Class Work (Challenge 1)



Nutrition Tracking

PAU Health Inc. It targets those who prefer to cook at home, but don't have the tools or the information to assess the nutritional quality of what they cook.



PAU Health Inc. wants your team to develop a nutrition tracking app, using which users can track their daily nutrition in terms of calories, protein, fat, and carbohydrates

BSTI Have the Data about all food in Bangladesh

Nutrition Tracking Requirements

1. Track nutrition by meal.
2. Take nutrition data for all food products from BSTI Bangladesh
3. Suggest nutrition requirements based on user’s gender, age, height, and weight.
4. Post a disclaimer on all suggestion outputs that it is based on BSTI recommendations.
5. Achieve minimum 80% adoption among PAU Health Inc customers within on year of product launch.

Nutrition Tracking Requirements

6. Collect data to track frequency and patterns of usage of all features.
7. First release of the app targeted for two months from start
8. User must log in to access personal data
9. The user data must be protected as per the health Insurance portability and accountability
10. The app should be intuitive and easy to use with no training requirements.

1

Categorize requirements.

2

Identify stakeholders.