



GSOE9820 – Engineering Project Management

Corey Martin

Never Stand Still

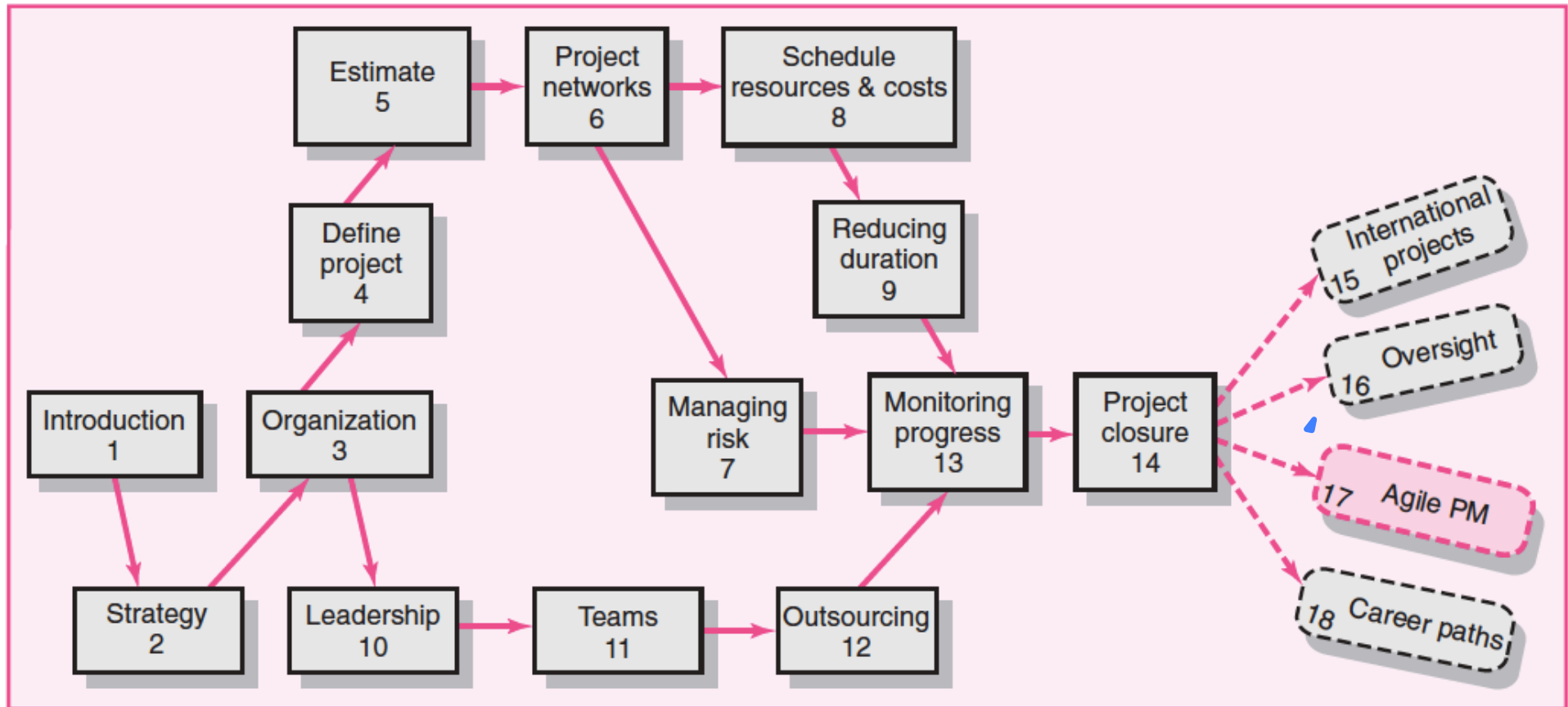
Faculty of Engineering

School of Mechanical and Manufacturing Engineering

Week 12

Introduction to agile project management

# Course Roadmap



# One-size does not fit all !!!



# Traditional vs Agile project management

## Traditional

Design up front

Fixed scope

Deliverables

Freeze design as early as possible

Low uncertainty

Avoid change

Low customer interaction

Conventional project teams

## Agile

Continuous design

Flexible

Features/requirements

Freeze design as late as possible

High uncertainty

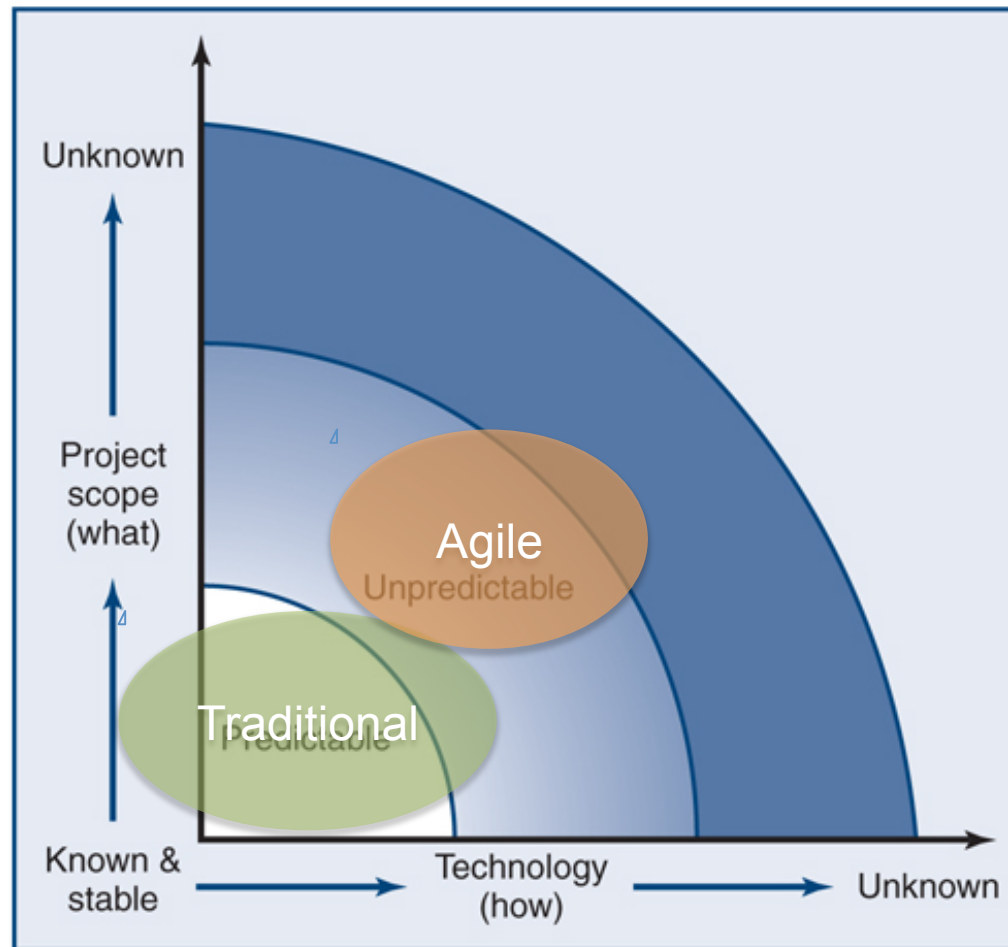
Embrace change

High customer interaction

Self-organised project teams

# Project uncertainty

Figure 17.1 PROJECT UNCERTAINTY



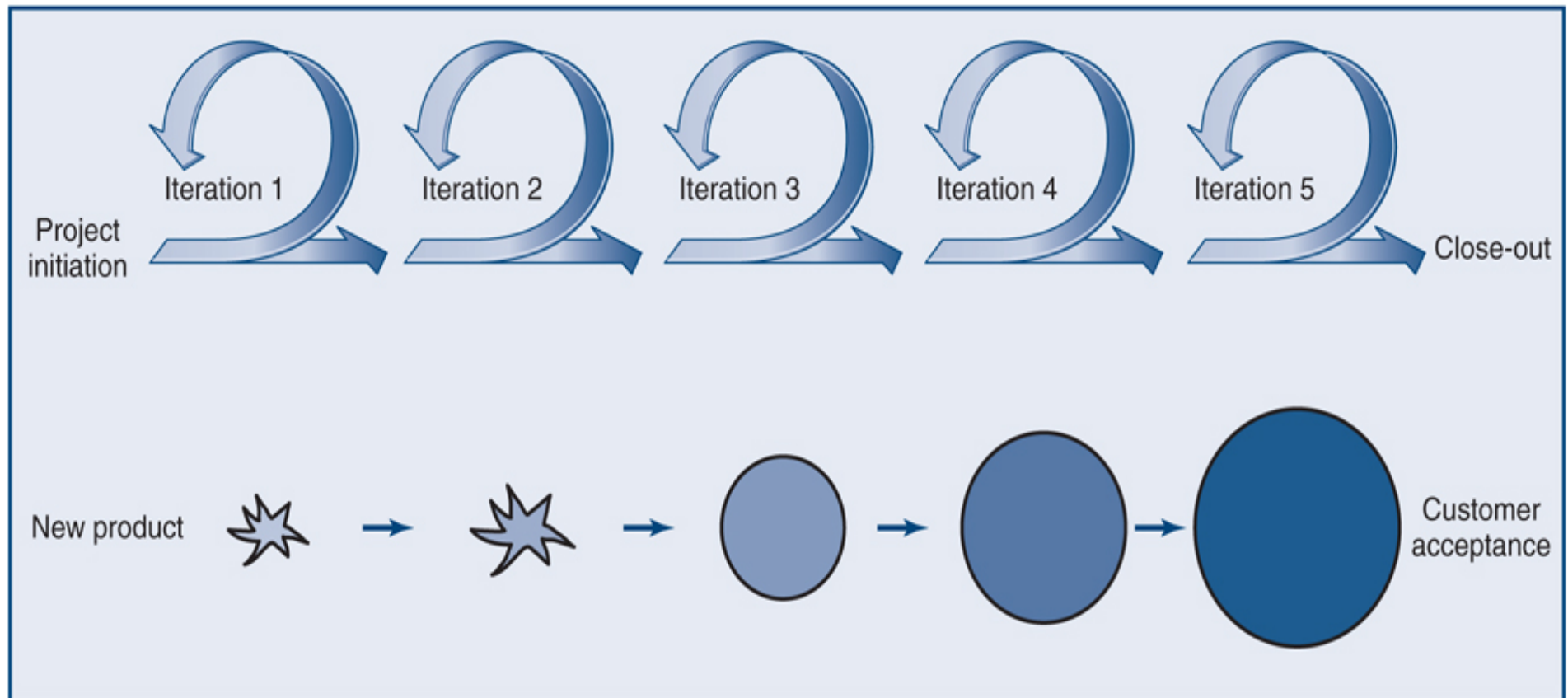
# Agile project management

Related to the rolling wave planning and scheduling project methodology

- Uses iterations (short time frames/boxes) to develop a workable product that satisfies the customer and other key stakeholders
- Stakeholders and customers review progress and re-evaluate priorities to ensure alignment with customer needs and company goals
- Adjustments are made and a different iterative cycle begins that subsumes the work of the previous iterations and adds new capabilities to the evolving product

# Incremental, iterative product development

Figure 17.2 INCREMENTAL, ITERATIVE PRODUCT DEVELOPMENT



# Advantages of Agile PM

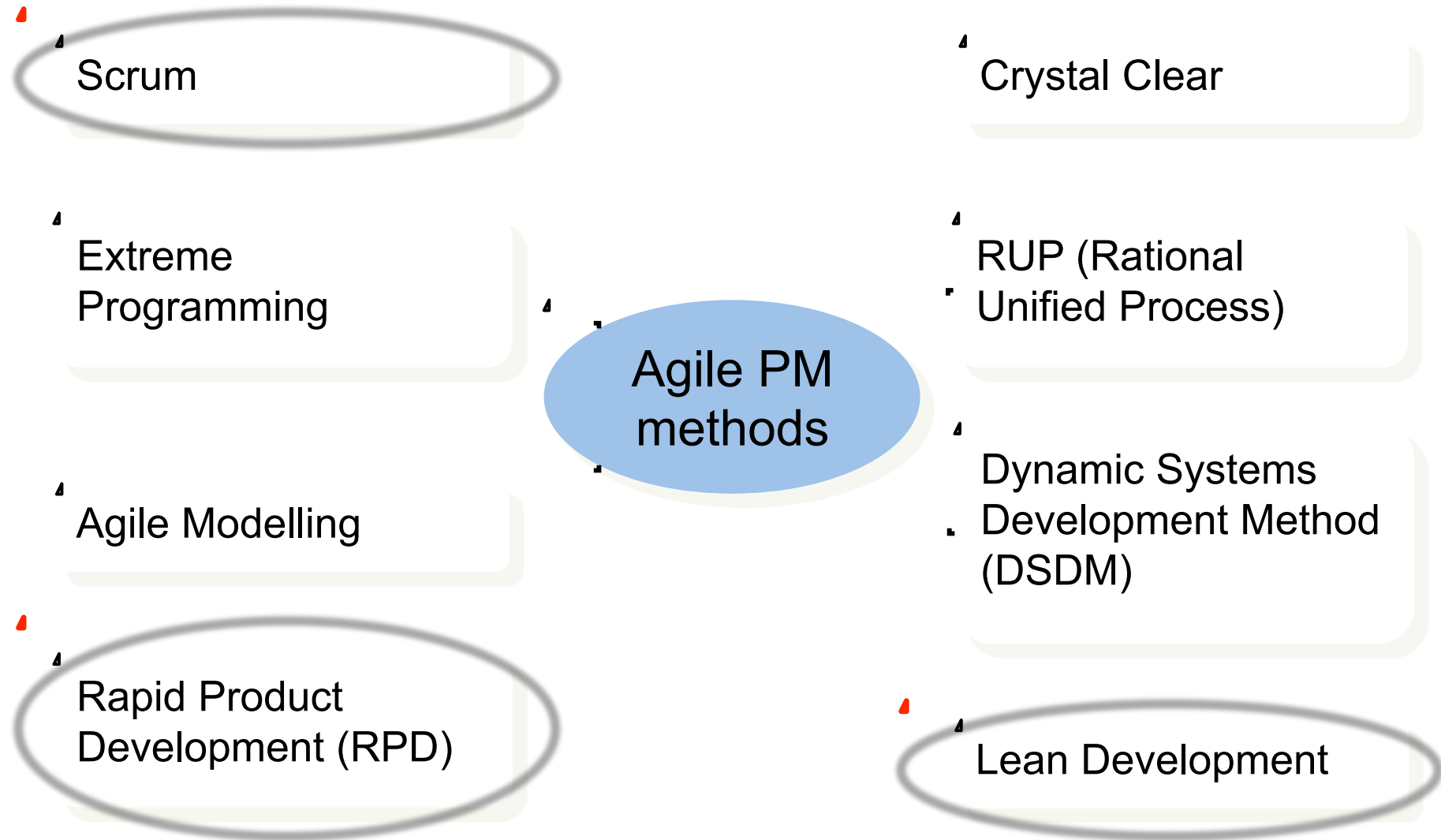
- Useful in developing critical breakthrough technology or defining essential features
- Continuous integration, verification and validation of the evolving product
- Frequent demonstration of progress to increase the likelihood that the end product will satisfy customer needs
- Early detection of defects and problems



# Agile PM principles



# Popular Agile PM methods



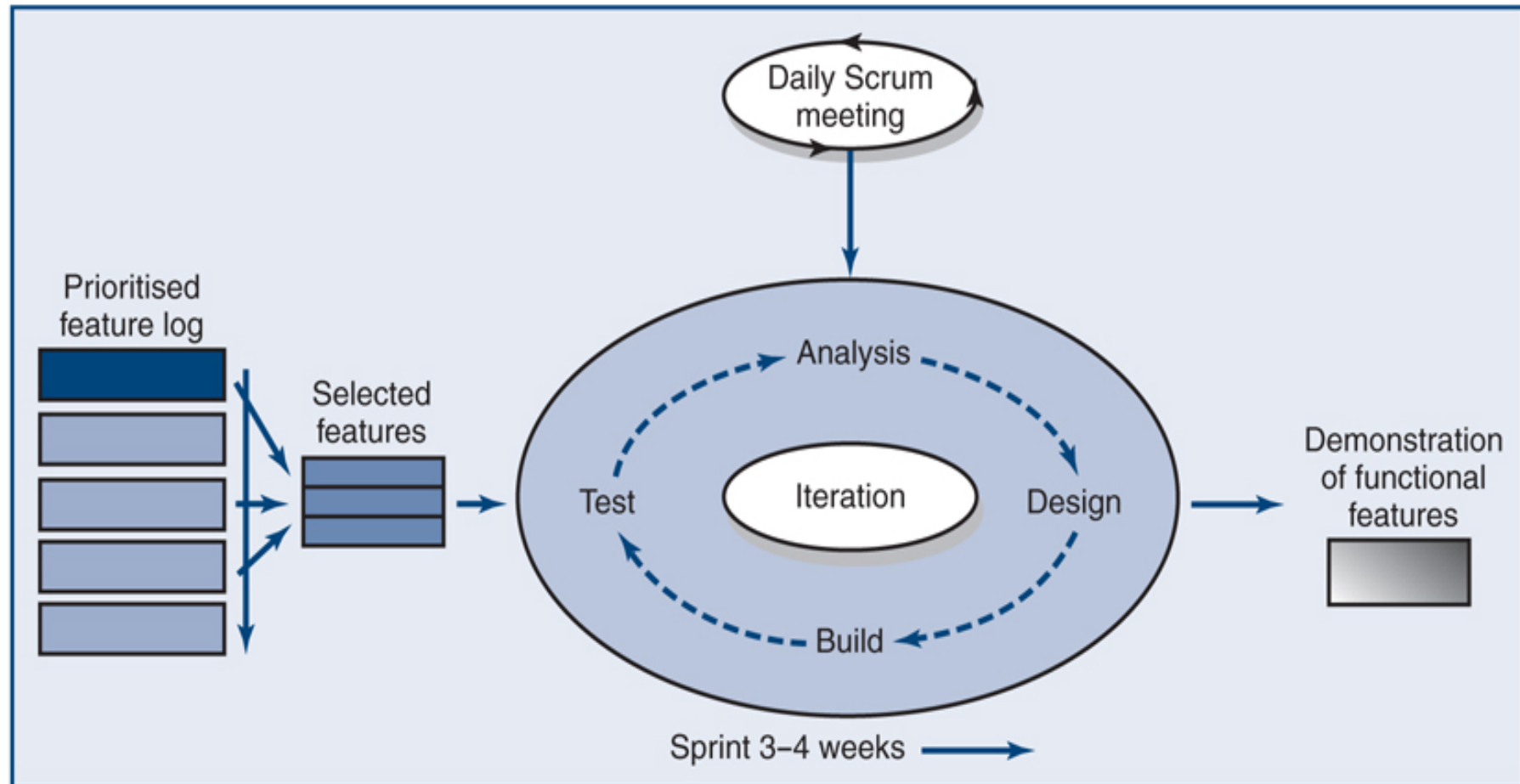
# Agile PM in action: Scrum

## Scrum methodology

- Is a holistic approach for use by a cross-functional team collaborating to develop a new product
- Defines product features as deliverables and prioritises them by their perceived highest value to the customer
- Re-evaluates priorities after each iteration (sprint) to produce fully functional features
- Has four phases: analysis, design, build, test
- Is usually applied to software development projects

# Scrum development process

Figure 17.3 SCRUM DEVELOPMENT PROCESS



# Scrum roles and responsibilities

## Product owner

- acts on behalf of customers to represent their interests
- Negotiates goals with development team
- Can change features and priorities at end of each sprint (not during)

## Development team

- is a team of 5 to 9 people with cross-functional skill sets who are responsible for delivering the product

## Scrum master (aka project manager)

- facilitates scrum process and resolves impediments at the team and organisation level by acting as a buffer between the team and outside interference

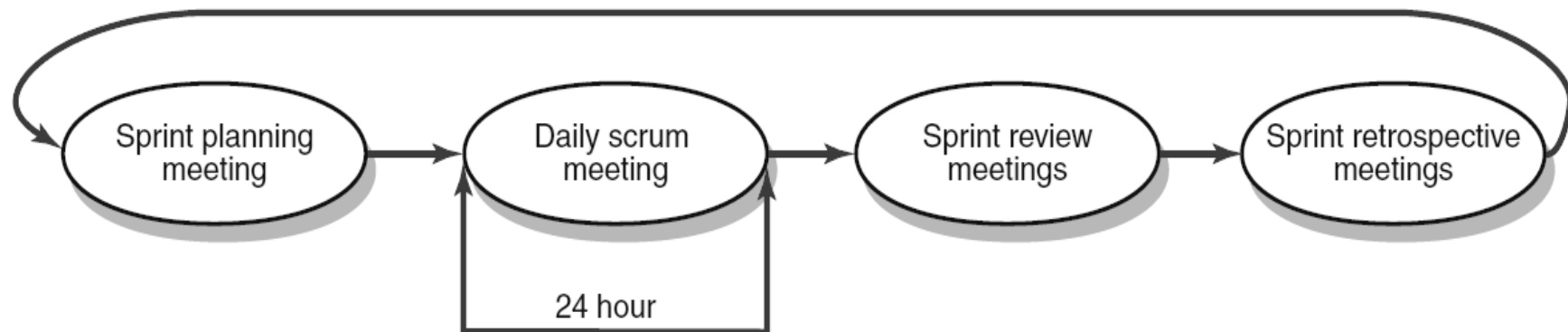
# Scrum meetings

## Sprint Planning

- break work down into 4 week pieces.

## Daily Scrum – (15 minutes duration)

- What has been done since last scrum?
- What will you do between now and next scrum?
- What is getting in the way from performing your work as effectively as possible?



# Applying Agile to large projects

## Scaling

- Using several teams to work on different features of a large scale project at the same time

## Staging

- Requires significant upfront planning to manage the interdependencies of different features to be developed
- Involves developing protocols and defining roles to coordinate efforts and assure compatibility and harmony

# Limitations of Agile PM

- It does not satisfy top management's need for budget, scope and schedule control.
- The principles of self-organisation and close collaboration can be incompatible with corporate cultures.
- Agile methods appear to work best on small projects that require only 5 to 9 dedicated team members to complete the work.
- It requires active customer involvement and cooperation.