SEN319 Software Project Management (Fall 2023)

Case Studies

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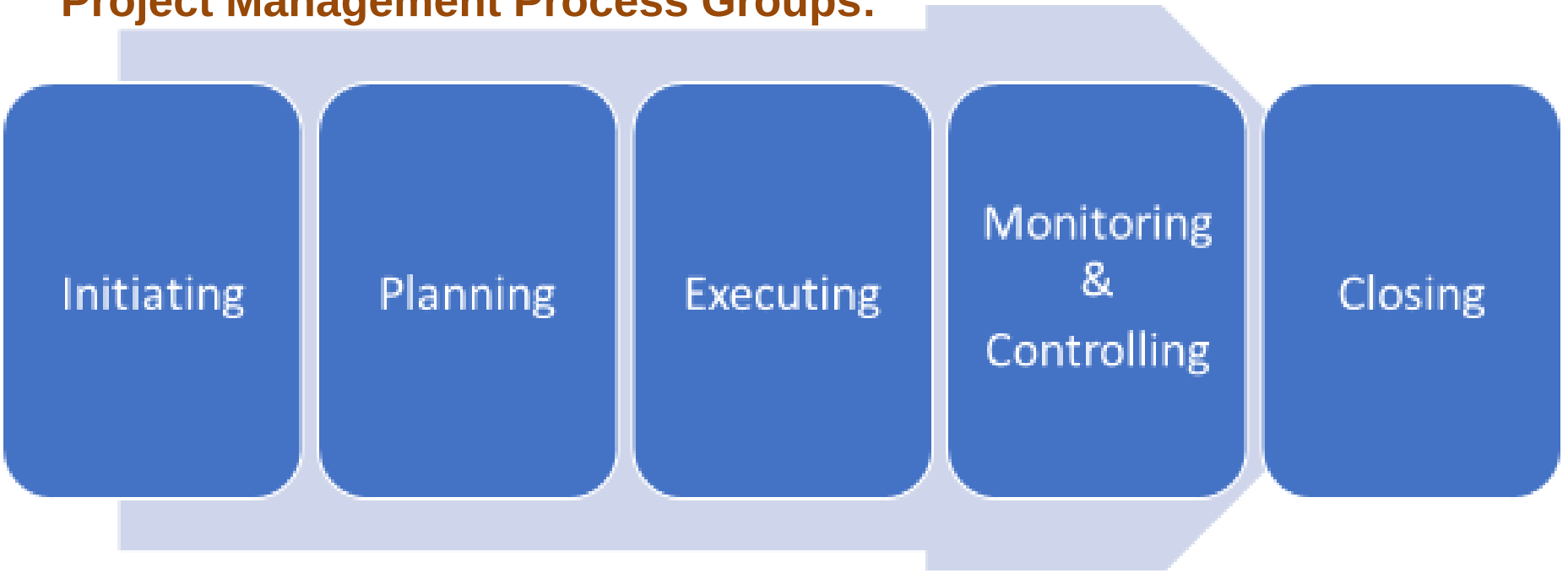
Agenda

- PM Process Groups
- Developing an IT Project Management Methodology
- Case Study-1 (Waterfall Approach)
- Case Study-2 (Agile Approach)

PM Process Groups

- A Project Management Process Group is a logical grouping of project management processes to achieve specific project objectives.
- Process Groups are independent of project phases.
- Project management processes are grouped into the following five Project Management Process Groups:



In Physical Exam Mary Cries Constantly

Developing an IT Project Management Methodology

- **The PMBOK Guide is a standard that describes best practices for what should be done to manage a project.**
- **A methodology describes how things should be done, and different organizations often have different ways of doing things.**
- **In addition to using the PMBOK Guide as a basis for project management methodology, many organizations use other guides or methods, such as the following:**

  - PRojects IN Controlled Environments (PRINCE2): Originally developed for IT projects, PRINCE2 was released in 1996 as a generic project management methodology by the U.K. Government.

  - Waterfall

  - Spiral

  - Agile

  - Six Sigma methodologies: Quality oriented methodology.

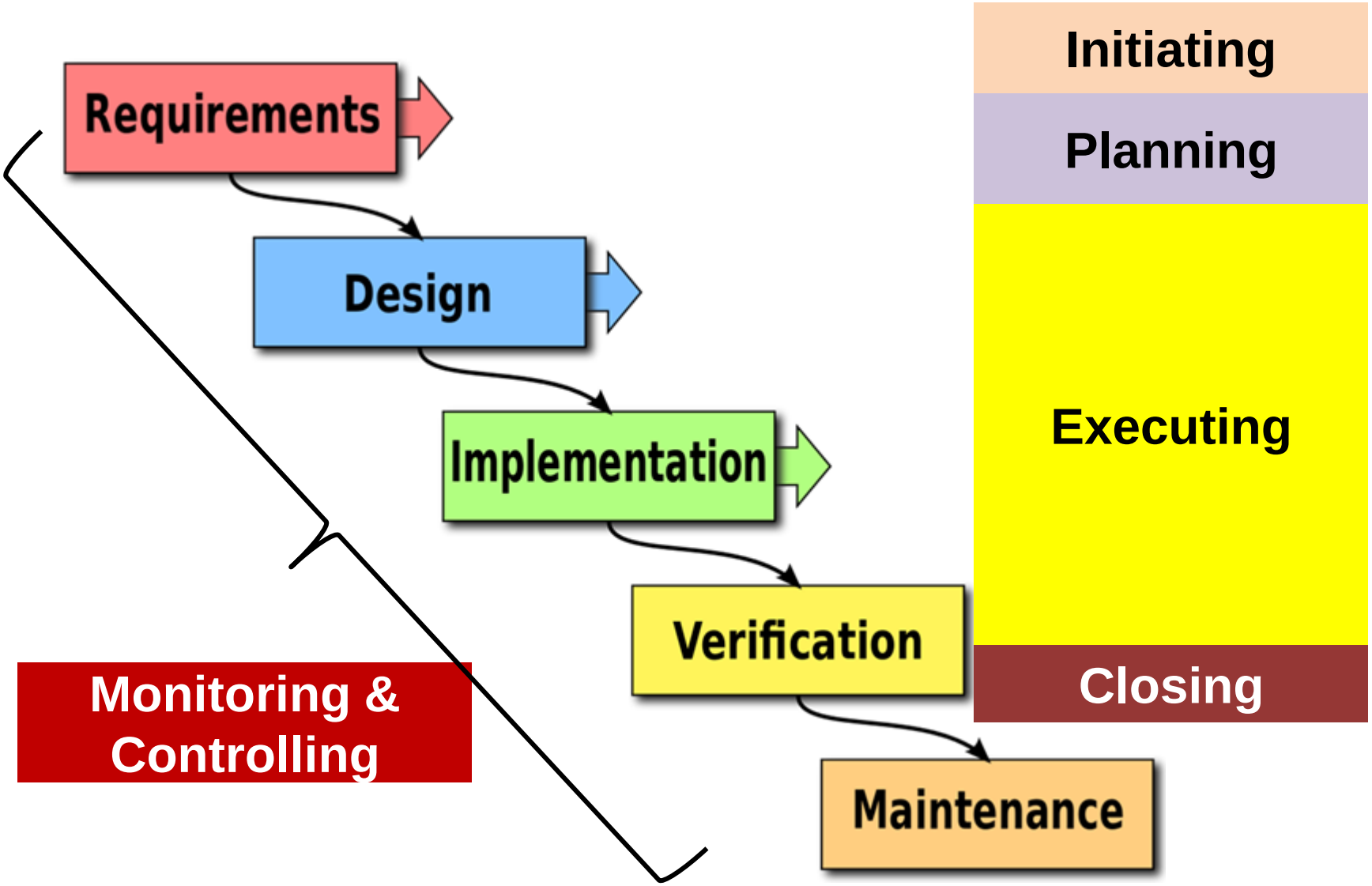
Developing an IT Project Management Methodology

- Many organizations tailor a standard or methodology to meet their unique needs.
- Even if organizations use the PMBOK Guide as the basis for their project management methodology, they still have to do a fair amount of work to adapt it to their unique work environment.

Case Study-1 (Waterfall)

- A Fictious Company: ABC Software Development Company
- 200 developers + 50 people from other departments including management.
- Company wants to create a new web site
- To facilitate its information sharing and lesson learned
- To attract new customers

Waterfall Phases vs Process Groups



Project Initiation

- In project management, initiating includes recognizing and starting a new project.
- An organization should put considerable thought into project selection to ensure that it initiates the right kinds of projects for the right reasons.
- It is important to remember that strategic planning should serve as the foundation for deciding which projects to pursue.
- The organization's strategic plan expresses the vision, mission, goals, objectives, and strategies of the organization. It also provides the basis for IT project planning.
- IT is usually a support function in an organization, so the people who initiate IT projects must understand how those projects relate to current and future needs of the organization.

Project Initiation

Pre-Initiation Tasks

- Determine the scope, time, and cost constraints for the project.
- Identify the project sponsor.
- Select the project manager.
- Develop a business case for a project.
- Meet with the project manager to review the process and expectations for managing the project.
- Determine if the project should be divided into two or more smaller projects.

Project Initiation

Business Case

- Introduction
- Business objective
- Current situation and problem/opportunity statement
- Critical assumptions and constraints
- Analysis of options and recommendation
- Preliminary project requirements
- Budget estimate and financial analysis
- Schedule estimate
- Potential risks
- Annexes

Project Initiation

Business Case

Introduction

- **ABC's core business goal is to provide world-class software development services to various organizations.**
- **The firm can streamline operations and increase business by providing information related to project management, software development and lesson learned on its intranet site, making some information and services accessible to current and potential clients.**

Project Initiation

Business Case

Business Objective

- ABC's strategic goals include continuing growth and profitability.
- The project management intranet site project will support these goals by increasing visibility of the firm's expertise to current and potential clients by allowing client and public access to some sections of the intranet.
- The project will also improve profitability by reducing internal costs by providing standard tools, techniques, templates, and project management knowledge to all internal personnel.

Project Initiation

Business Case

Current Situation and Problem/Opportunity Statement

- ABC has a corporate website as well as an intranet. The firm currently uses the website for marketing information.
- Current system is insufficient for sharing valuable information.
- There is an opportunity to provide a new section on the intranet dedicated to sharing developers' knowledge across the organization.
- As the business grows and projects become more complex, even experienced developers and project managers are looking for suggestions on how to work more effectively.

Project Initiation

Business Case

Critical Assumptions and Constraints

- The proposed intranet site must be a valuable asset for ABC.
- Current developers and clients must actively support the project, and it must pay for itself within one year by reducing internal operating costs and generating new business.
- The Project Management Office (PMO) manager must lead the effort, and the project team must include participants from several parts of the company.
- The new system must run on existing hardware and software, and it should require minimal technical support.
- It must be easily accessible by developers and clients and be secure from unauthorized users.

Project Initiation

Business Case

Analysis of Options and Recommendation

- There are three options for addressing this opportunity:
  1. Do nothing. The business is doing well. Then, continue to operate without this new project.
  2. Purchase access to specialized software to support this new capability with little in-house development.
  3. Design and implement the new intranet capabilities in-house, using mostly existing hardware and software.
- Based on discussions with stakeholders, option 3 is selected.

Project Initiation

Business Case

Preliminary Project Requirements

- Access to several project management and software development templates and tools.
- Access to relevant information resources (books, articles, etc.)
- Links to other, up-to-date websites.
- Online help feature.
- Secure site with necessary access controls.
- Membership for external users.
- Other features suggested by users, if they add value to the business.

Project Initiation

Business Case

Budget Estimate and Financial Analysis

Item	Cost/Hour	Total Hour	Item Cost
Management	75	400	30.000,00
Developers	50	2000	100.000,00
New software and services			20.000,00
		Total Cost	**150.000,00**

Item	Value
# of Users who benefit	250,00
Hours saved/person in a year	52,00
$/Hour profit	10,00
Benefit from saving time	130.000,00
Benefit from increasing % 1 profit	70.000,00
Total Projected Benefits	**200.000,00**

Project Initiation

Business Case

Schedule Estimate

- The management would like to see the project completed within 6 months, but there is some flexibility in the schedule.
- The new system will have a useful life of at least three years.

Project Initiation

Business Case

Potential Risks

- This project carries several risks.
- The foremost risk is a lack of interest in the new system by our internal developers and external clients.
- User inputs are crucial for populating information into this system and realizing the potential benefits from using the system.
- There are some technical risks in choosing the type of software used to search the system, implement security, process payments, and so on, but the features of this system all use proven technologies.
- The main business risk is investing the time and money into this project and not realizing the projected benefits.

Project Initiation

Knowledge Area	Initiating Process	Outputs
Project Integration Management	Develop project charter	Project charter Assumption log
Project Stakeholder Management	Identify stakeholders	Stakeholder register Change requests Project management plan updates Project documents updates

Recall that every project and every organization is unique, so not all project charters, stakeholder registers, and other outputs will look the same.

Project Initiation

Identifying Project Stakeholders

- **Stakeholders are people involved in project activities or affected by them, and include the**
  - **Project sponsor,**
  - **Project team,**
  - **Support staff,**
  - **Customers,**
  - **Users,**
  - **Suppliers, and even**
  - **Opponents to the project.**

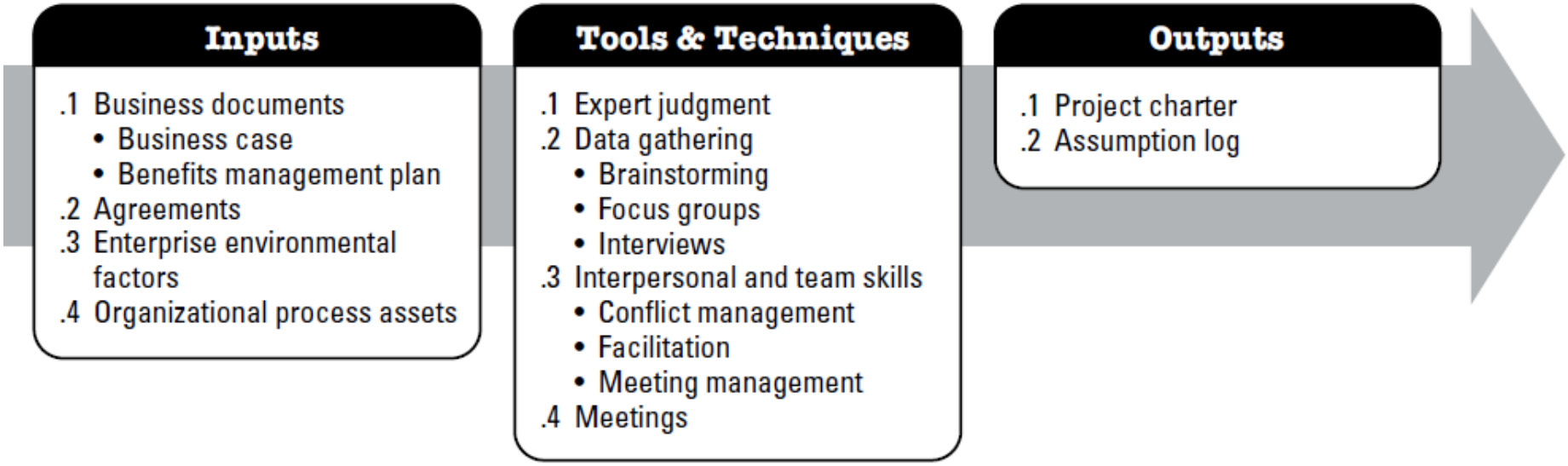
Project Initiation

Identifying Project Stakeholders

Name	Position	Project Role	Contact Info
Ali Arslan	CEO	Sponsor	ali@abc.com
Berna Boz	PMO Director	Project Manager	berna@abc.com
Cevdet Ceviz	Senior Consultant	Team Member	cevdet@abc.com
Davut Dağ	Business Analyst	Advisor	davut@abc.com
Esma El	PR Director	Advisor	esma@abc.com

Project Initiation

Develop Project Charter



- **At a high level, the project charter ensures a common understanding by the stakeholders of the key deliverables, milestones, and the roles and responsibilities of everyone involved in the project.**

Project Initiation

Project Charter - Content

- Project purpose;
- Measurable project objectives and related success criteria;
- High-level requirements;
- High-level project description, boundaries, and key deliverables;
- Overall project risk;
- Summary milestone schedule;
- Preapproved financial resources;
- Key stakeholder list;
- Project approval requirements (i.e., what constitutes project success, who decides the project is successful, and who signs off on the project);
- Project exit criteria (i.e., what are the conditions to be met in order to close or to cancel the project or phase);
- Assigned project manager, responsibility, and authority level; and
- Name and authority of the sponsor or other person(s) authorizing the project charter.

Project Initiation

Drafting the Project Charter

Project Title: Project Management Intranet Site Project
Project Start Date: Nov 12, 2021 Projected Finish Date: May 12, 2021
Budget Information: The firm has allocated $150,000 for this project. Xxxx
Project Manager: Berna Boz, berna@abc.com
Project Objectives: Develop a new capability accessible on ABC's intranet site to help internal consultants and external customers manage projects more effectively. Xxxxxxxxxx
Main Project Success Criterion: The project should pay for itself within one year of completion.
Approach: • Develop a survey to determine critical features of the new intranet site. • Review internal and external templates and examples of project management documents. • Research software to provide security, manage user inputs, and other features. • Develop the intranet site using Waterfall approach. • Develop a way to measure the value of the intranet site in terms of reduced costs and new revenues, both during the project and one year after project completion.
Roles: Xxxx…
Signatures: Xxxxx

Project Initiation

Holding a Project Kick-Off Meeting

Kick-Off Meeting
[Date of Meeting]

Project Name: Project Management Intranet Site Project

Meeting Objective: Get the project off to an effective start by introducing key stakeholders, reviewing project goals, and discussing future plans

Agenda:

- Introductions of attendees
- Review of the project background
- Review of project-related documents (business case and project charter)
- Discussion of project organizational structure
- Discussion of project scope, time, and cost goals
- Discussion of other important topics
- List of action items from meeting

Action Item	Assigned To	Due Date

Project Planning

- Planning is often the most difficult and unappreciated process in project management.
- Because planning is not always used to facilitate action, many people view planning negatively.
- The main purpose of project plans, however, is to guide project execution.
- To guide execution, plans must be realistic and useful, so a fair amount of time and effort must go into the planning process.
- People who are knowledgeable about the work need to plan the work.

Project Planning

- **Recall that the PMBOK Guide is only a guide, so many organizations may have different planning outputs based on their particular needs, as is the case in this example.**
- **Because the project management intranet site project is relatively small, Berna believes some of the most important planning documents to focus on are the following:**
  - **A team charter**
  - **A project scope statement**
  - **A work breakdown structure, a key part of the scope baseline**
  - **A project schedule, in the form of a Gantt chart with all dependencies and resources entered**
  - **A list of prioritized risks (part of a risk register)**

Project Planning

Work Breakdown Structure

- 1.0 Initiating
  - 1.1 Stakeholder identification
  - 1.2 Project charter
  - 1.3 Kick-off meeting
- 2.0 Planning
  - 2.1 Team planning meeting
  - 2.2 Team charter
  - 2.3 Scope statement
  - 2.4 WBS
  - 2.5 Schedule and cost baseline
    - 2.5.1 Task resources
    - 2.5.2 Task durations
    - 2.5.3 Task dependencies
    - 2.5.4 Draft Gantt chart
    - 2.5.5 Final Gantt chart
  - 2.6 Risk prioritization
- 3.0 Executing
  - 3.1 Survey
  - 3.2 User inputs
  - 3.3 Intranet site content
    - 3.3.1 Templates and tools
    - 3.3.2 Articles
    - 3.3.3 Links
    - 3.3.4 Ask the Expert
    - 3.3.5 User Requests feature
  - 3.4 Intranet site design
  - 3.5 Intranet site construction
  - 3.6 Intranet site testing
  - 3.7 Intranet site promotion
  - 3.8 Intranet site roll-out
  - 3.9 Project benefits measurement
- 4.0 Monitoring and Controlling
  - 4.1 Progress reports
  - 4.2 Change requests
- 5.0 Closing
  - 5.1 Final project report
  - 5.2 Final project presentation
  - 5.3 Lessons learned

Project Planning

List of Prioritized Risks

No	Potential Risk
1	Lack of inputs from employees
2	Lack of inputs from client representatives
3	Security of new system
4	Outsourcing/purchasing for processing online payment transactions
5	Providing an efficient search feature
6	Effectively promoting the new system
7	Realizing the benefits of the new system within one year

Project Execution

- **Executing the project involves taking the necessary actions to complete the activities in the project plan.**
- **The products of the project are created during project execution, and it usually takes the most resources to accomplish this process.**

Project Execution

Milestone Report as of 15 March 2022

Milestone	Responsible	Date	Status	Comments
Initiating				
Stakeholders identified	Ali and Berna	12 Nov	Completed	
Project charter signed	Berna	20 Nov	Completed	
Planning				
Team charter signed	Berna	22 Nov	Completed	
Scope statement completed	Berna	25 Nov	Completed	
WBS completed	Berna and Veli	02 Dec	Completed	
Executing				
Intranet site design completed	Developer Team	10 Mar	Completed	
Templates and tools completed	Developer Team	15 Apr	Not Started	
Membership feature completed	Developer Team	16 Apr	Not Started	
Monitoring & Controlling				
Progress reports	All	Every Friday	Periodic	
Closing				
Final project report completed	Berna	10 May	Not Started	
Lessons-learned reports submitted	All	12 May	Not Started	

Project Monitoring & Controlling

- **Monitoring and controlling is the process of measuring progress toward project objectives, monitoring deviation from the current plan, and taking corrective action to match progress with the current plan.**
- **Monitoring and controlling is done throughout the life of a project and involves all 10 project management knowledge areas.**

Project Monitoring & Controlling

- On the intranet site project, several updates to the project management plan were made to reflect changes made to the project scope, schedule, and budget.
- Berna and other project team members took corrective action when necessary.
- For example, when they were not getting many responses to their survey, Berna asked her friends for help.
- When they had trouble negotiating with a supplier, they got help from another senior consultant who had worked with that supplier in the past. Berna also had to request more funds for that part of the project.

Project Monitoring & Controlling

Sample Weekly Progress Report

Work completed this week:
– Started developing a file naming scheme for content files.
– Continued work on Membership and User Requests features.
– Met with preferred supplier.
– Verified that their software would meet our needs.
Work to complete next week:
– Continue work on intranet site construction.
– Prepare draft contract for preferred supplier.
– Develop new cost estimate for outsourced work.
What's going well and why:
- The intranet site construction started well. The design was very clear and easy to follow.
What's not going well and why:
- It is difficult to decide how to organize the templates and examples. Need more input from senior consultants.
Suggestions/Issues:
– Hold a special meeting to decide how to organize the templates and examples on the intranet site.
– Get some sample contracts and help in negotiating with the preferred supplier.
Project changes:
- I think we can stay on schedule, but it looks like we'll need about $20,000 more for outsourcing. That's doubling our budget in that area.

Project Closing

- The closing process involves gaining stakeholder and customer acceptance of the final products and services and then bringing the project or project phase to an orderly end.
- It includes verifying that all of the deliverables are complete, and it often includes a final project report and presentation.
- Even though many IT projects are canceled before completion, it is still important to formally close any project and reflect on what can be learned to improve future projects.
- It is also important to plan for and execute a smooth transition of the project into the normal operations of the company.

Project Closing

Final Project Report Table of Contents

1. **Project Objectives**
2. **Summary of Project Results**
3. **Original and Actual Start and End Dates**
4. **Original and Actual Budget**
5. **Project Assessment (Why did you do this project? What did you produce? Was the project a success? What went right and wrong on the project?)**
6. **Transition Plan**
7. **Annual Project Benefits Measurement Approach**

Attachment A: Product-Related Documentation

- Survey and results
- Summary of user inputs
- Intranet site content
- Intranet site design documents
- Test plans and reports
- Intranet site promotion information
- Intranet site roll-out information
- Project benefits measurement information

Attachment B: Project Management Documentation

- Business case
- Project charter
- Team charter
- Scope statement
- WBS and WBS dictionary
- Baseline and actual Gantt chart
- List of prioritized risks
- Milestone reports
- Progress reports
- Contract files
- Lessons-learned reports
- Final presentation
- Client acceptance form

Case Study-2 (Agile)

- **Same project will be conducted by using Agile Approach, namely Scrum methodology.**
- **Agile approach is often used for projects in which the business team cannot clearly express the scope early in the product life cycle, but the team wants to provide a potentially shippable product earlier rather than later.**
- **An agile project team typically uses several iterations or deliveries of software instead of waiting until the end of the project to provide one product.**
- **Projects with less rigid constraints, experienced and preferably co-located teams, smaller risks, unclear requirements, and more flexible scheduling would be more compatible with an agile approach.**

Scrum Roles

- **Product Owner: The person responsible for the business value of the project and for deciding what work to do and in what order, as documented in the product backlog.**
- **Scrum Master: The person who ensures that the team is productive, facilitates the daily Scrum, enables close cooperation across all roles and functions, and removes barriers that prevent the team from being effective.**
- **Scrum team or development team: A cross-functional team of five to nine people who organize themselves and the work to produce the desired results for each sprint. A sprint normally lasts two to four weeks, during which specific work must be completed and made ready for review.**

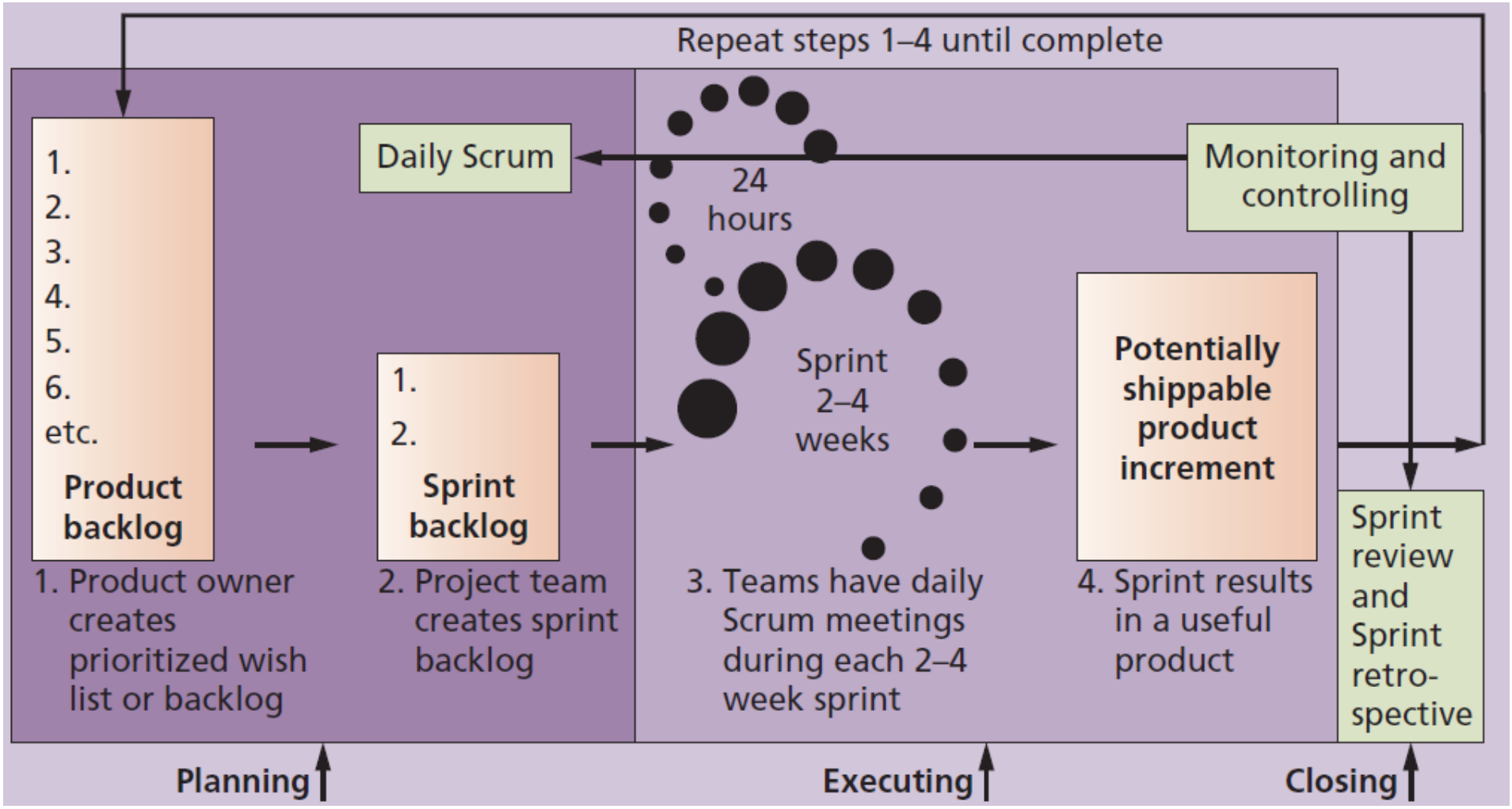
Scrum Artifacts

- **Product backlog: A list of features prioritized by business value. The highest-priority items should be broken down in enough detail for the team to estimate the effort involved in developing them.**
- **Sprint backlog: The highest-priority items from the product backlog to be completed within a sprint. The Scrum team breaks down the highest priority items into smaller tasks that take about 12 to 16 hours to complete.**
- **Burndown chart: Shows the cumulative work remaining in a sprint on a day by-day basis.**

Scrum Ceremonies

- **Sprint Planning Session: A meeting with the team to select a set of work from the product backlog to deliver during a sprint. This meeting takes about four hours to a full day.**
- **Daily Scrum: A short meeting for the development team to share progress and challenges and plan work for the day. Ideally the team members are in the same place, the meeting usually lasts no more than 15 minutes, and it is held at the same time and place each day.**
- **Sprint Reviews: A meeting in which the team demonstrates to the product owner what it has completed during the sprint.**
- **Sprint Retrospectives: A meeting in which the team looks for ways to improve the product and the process based on a review of the actual performance of the development team.**

Scrum Framework and the Process Groups



Scrum Activities by Process Group

Initiating:
• Determine roles.
• Decide how many sprints will compose each release and the scope of software to deliver.

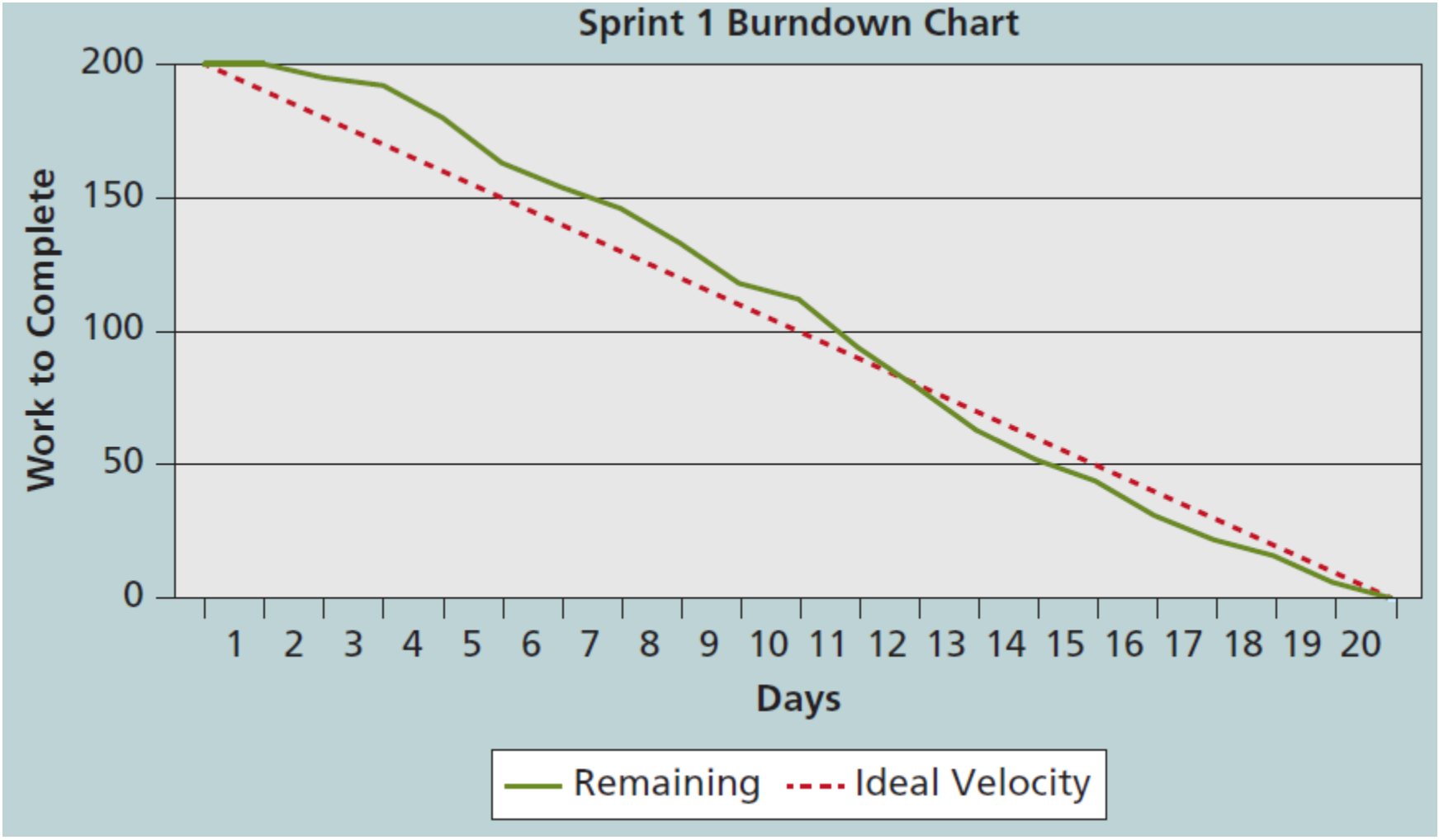
Planning:
• Create product backlog.
• Create sprint backlog.
• Create release backlog.
• Plan work each day in the daily Scrum.
• Document stumbling blocks in a list.

Executing:
• Complete tasks each day during sprints.
• Produce a shippable product at the end of each sprint.

Monitoring and Controlling:
• Resolve issues and blockers.
• Create and update burndown chart.
• Demonstrate the completed product during the sprint review meeting.

Closing:
• Reflect on how to improve the product and process during the sprint retrospective meeting.

Burndown Chart



PM Processes in Case Study-2

- **All of the PMI project management process groups are followed and performed in this case study as they were done in Case Study-1.**

Thank you…

Hasan ÇİFCİ