

Information Systems

Prepared by Dr. Amjad Qtaish

IT372
Information Systems

Lecture 08



Module 4: Systems Development



Dr. Amjad Qtaish

*Faculty of Informatics
Midocean University*

Chapter 12: (IS) Project Management
Chapter 14: Design And Implementation

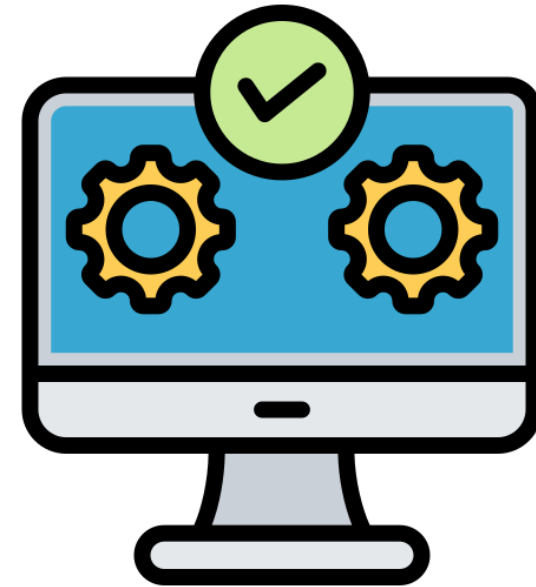


Information Systems (IT372)



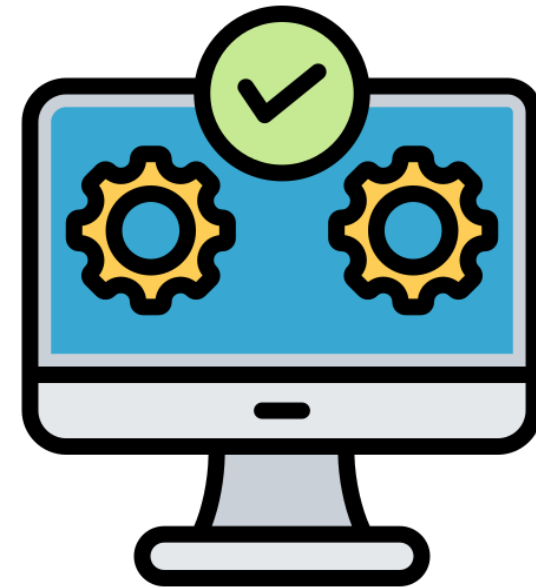
Systems Development:

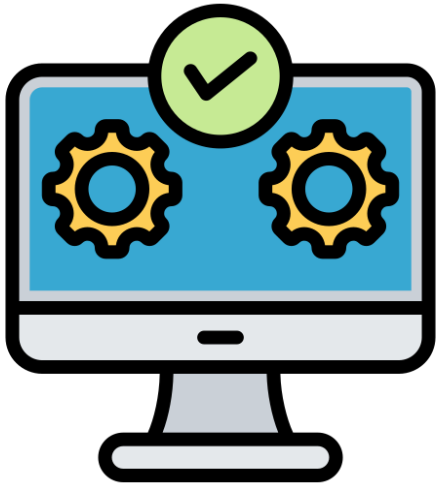
- Importance of Project Management
- Project Management Concepts
- Change Management and Concept of Implementation
- Designing for the Organization
- Systems Implementation
- Systems Operation and Maintenance
- Systems Review
- Systems Performance Measurement
- Summary



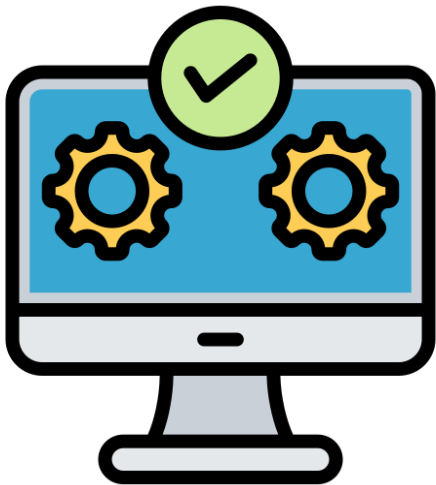


- Discuss the importance of project management by learning different reasons of project failures
- Discuss the various ways of selecting projects and concepts related with the selection
- Discuss the risks, specifically change management and what should be considered in designing for the organization
- Discuss System design and differences between logical and physical design
- Describe the considerations in interface design and system security design
- Describe techniques for system selection evaluation
- State the purpose of system implementation and discuss the activities associated with it
- List the advantages and disadvantages of purchasing versus developing software

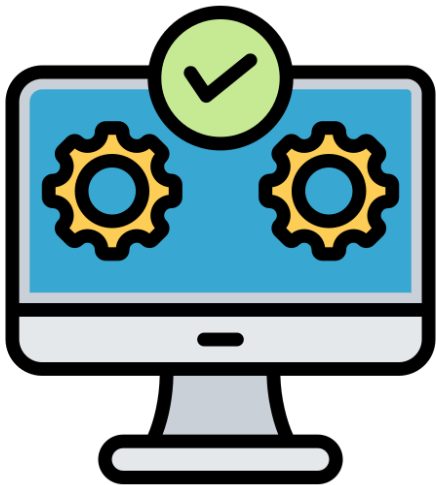




- **There is a high failure rate among IS projects**
- **Inadequate project management might have the following consequences**
 - Costs that vastly exceed budgets
 - Unexpected time slippage
 - Technical performance that is less than expected
 - Failure to obtain anticipated benefits
- ***Therefore, it is importance to have knowledge about managing IS projects and causes of failure***



- **The systems produced might have the following types of problems**
 - Doesn't fulfil business requirements
 - Not in easily understandable format
 - Designed with poor user interface
 - Outputs difficult to comprehend
 - Data is inconsistent or incomplete
 - Web pages are cluttered poorly arranged

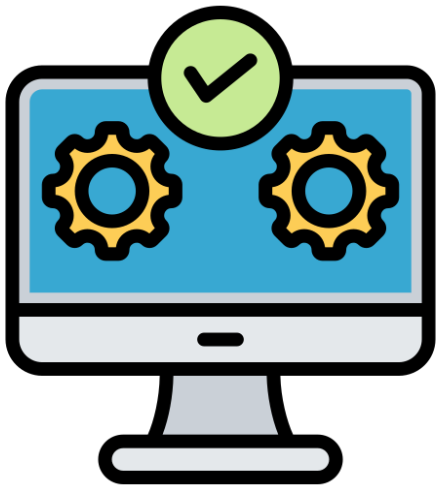


- **IS Project**

- Planned series of related activities for achieving a specific business objective

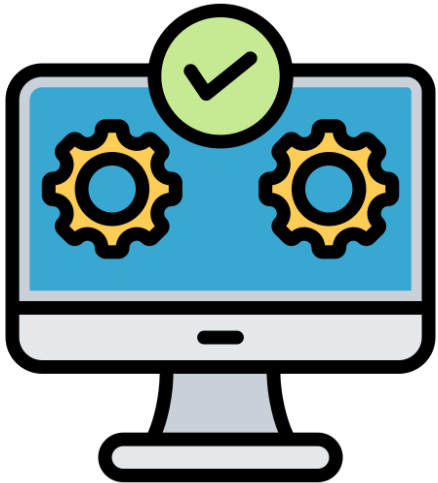
- **Project Management**

- Refers to application of knowledge, skills, tools, and techniques to achieve specific targets within specified budget and time constraints
 - Planning the work
 - Assessing risk
 - Estimating resources
 - Organizing the work
 - Acquiring human and material resources
 - Assigning tasks
 - Project execution
 - Reporting progress
 - Analyzing results



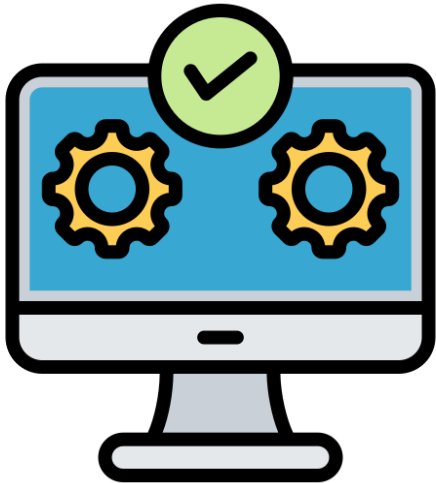
- **Variables of project management**

- **Scope:** what work does the project encompass. Need to define the scope initially
- **Time:** amount of time required to complete. Time line is set for different project components and tasks within as well
- **Cost:** depends on time required multiplied and cost of human resources, plus h/w, s/w & work space costs
- **Quality:** indicates how well has the project satisfied the management. Also ensures accuracy and timeliness of the information produced
- **Risk:** potential problems that would threaten the success of a project



- **Linking Systems projects to Business Plan**

- Develop information systems plan that support overall business plan
- The plan serves as a roadmap to define
 - Direction of systems development
 - The rationale
 - The current systems/ situations
 - New development to consider
 - The management strategy
 - Implementation plan and budget
- The plan also indicates the key management decisions for
 - Acquiring IT infrastructure
 - Centralization/decentralization
 - Organizational change
- For decision making systems, managers should identify what decision improvements are required to be achieved



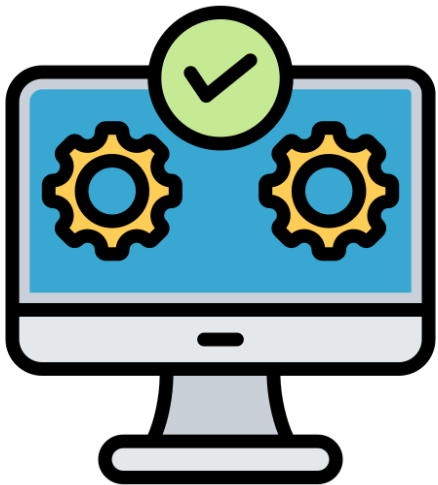
- **Critical Success Factors (CSF)**

- For IS plan, both long term and short-term information requirements needs to be defined
- These are determined by the CSF
- Goals attained results in success assured
- Therefore Information Systems need to be built to provide information that helps the firm meet these goals



• Portfolio Analysis

- Used to evaluate alternative system projects
- Lists all organization's IS projects and assets
- Projects are profiled for risks and benefits to the firm
- Most desirable high benefits, low risk



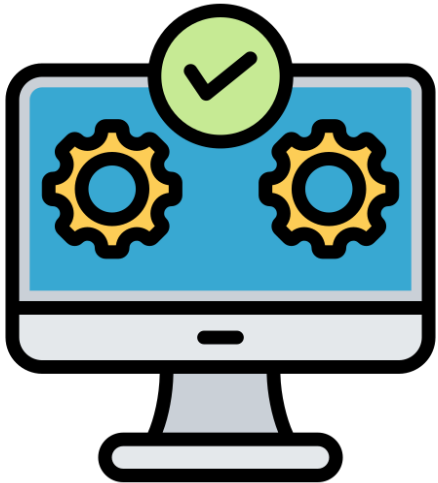
Provide
benefits to
firm

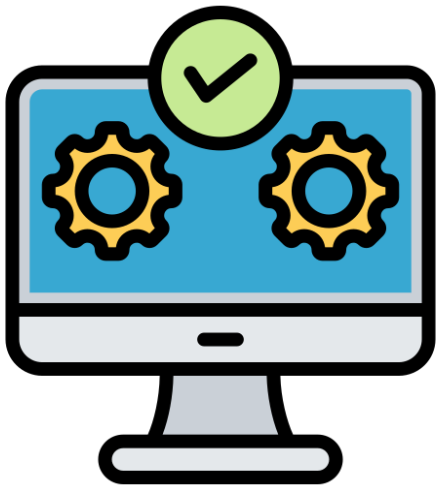
	High	Low
High	Cautiously Examine	Identify and Develop
Low	Avoid	Routine Projects



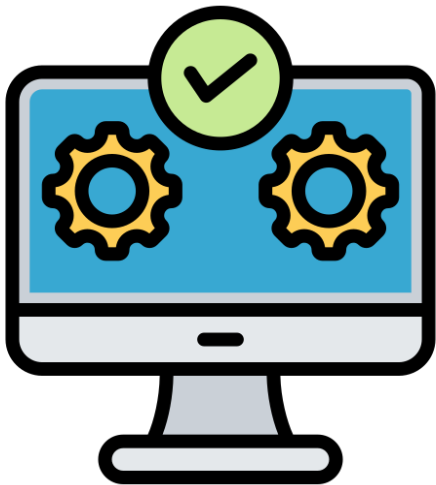
- **Scoring Models**

- Useful for selecting projects where many criteria must be considered
- Assign weights to different features and then calculate weighted total
- E.g. weights can be assigned to certain aspects of order processing, inventory management and warehousing
- Even though it's calculations, but qualitative judgments are also involved by experts who understand the issues and the technology





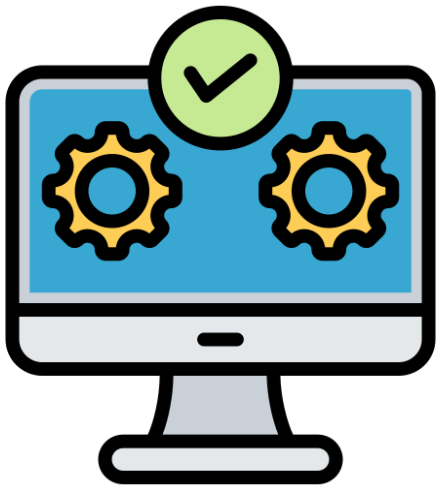
- **Information Systems, whether new or updated, have a huge behavioural & organizational impact**
- **Successful system development is dependent on *change management***
- ***The concept of implementation***
 - Refers to all organizational activities working towards adoption, management and routinization of the new IS
 - Change Agent: System analyst
 - Redefines configuration, interactions, job activities and power relationships of various organizational groups
 - Ensures all parties accept change



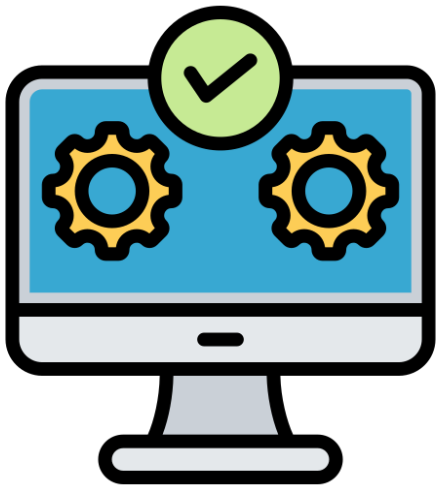
- ***The Role of End User***

- Various positive reasons of user involvement in the implementation of IS
- User have more opportunities to mold the system according to their priorities and business requirements
- More likely to react positively response to completed system
- User knowledge and expertise leads to better solutions

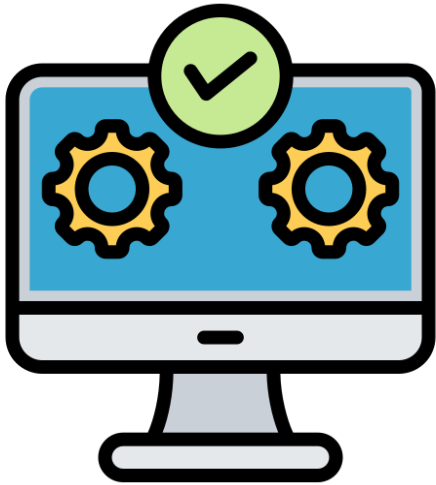
- However, there is a user-designer communication gap, that can be a cause of high risk failure of the project
- Both parties concerned with different ways to solve a problem



- ***Change management challenges for BPR, Enterprise Applications, Mergers***
 - Challenges of Innovation and implementation
 - Replace old techniques and legacy systems
 - Dealing with fear and anxiety, overcoming resistance by key managers, changing jobs etc. pose more difficulty
 - Mergers require combining IS of two different companies, because without systems integration, benefits anticipated from mergers cannot be realized



- IS projects must explicitly address ways in which the organization will change
 - Transformation in job functions, organizational structure, power relationships, work environment
- Ergonomics: interaction of people and machines in the work environment
- Organizational Impact Analysis: explains how proposed system will effect various aspects of organization
- Sociotechnical Design: technical solutions are compared with social solutions



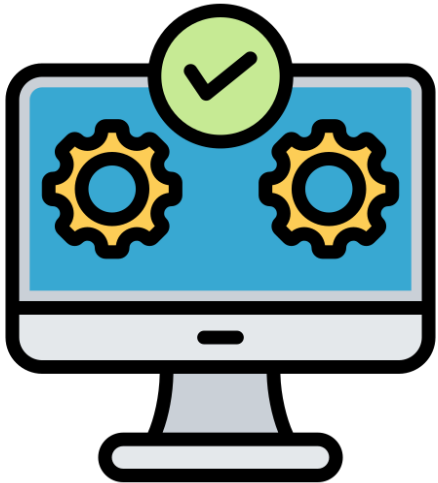
- **Includes**

- hardware acquisition,
- programming and software acquisition or development,
- user preparation,
- hiring and training of personnel,
- site and data preparation,
- installation,
- Testing
- user acceptance



- **Acquiring Hardware**

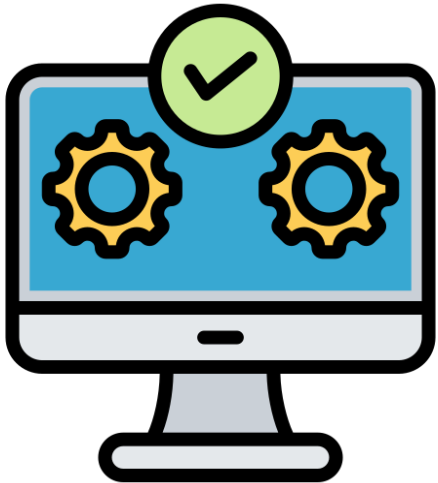
- Organizations purchase, lease or rent hardware from IS vendors
- IS vendors
 - General or small computer manufacturers
 - Peripheral equipment manufacturers
 - Computer dealers and distributors
- Pay for computing services
 - Processors, storage devices, network facilities



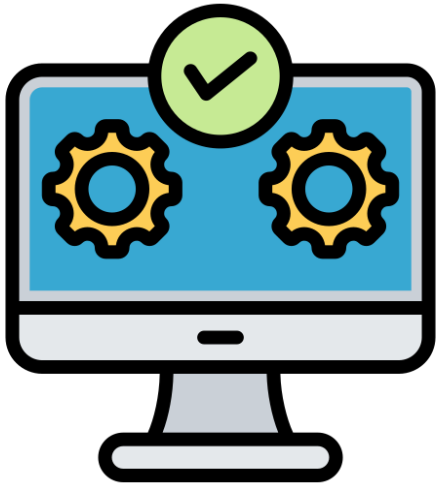


• Acquiring Software

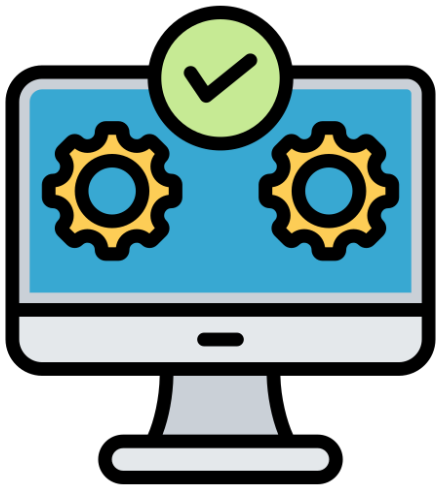
- Make or buy decision to be made by the company
- Most cases it is a blend: e.g. OS are purchased or modify other off-the-shelf software



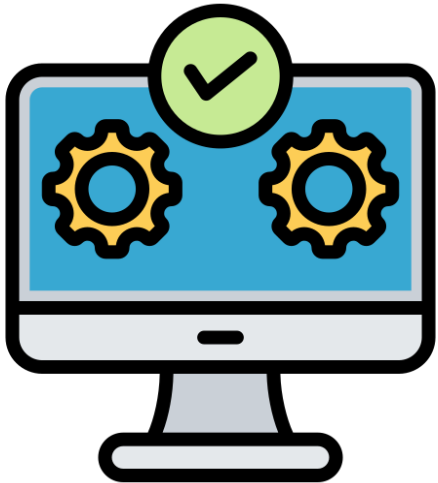
Factor	Off the Shelf	Developed
Cost	Low cost	High cost
Needs	Might not get what you need	Custom software to satisfy the need
Quality	Usually high quality	Quality varies depending on programming team
Speed	Can acquire instantly	Can take years to develop
Competitive advantage	Other organizations can have the same software and same advantages	Can develop a competitive advantage with good software



- **Externally Acquired Software**
 - Software as a Service (SaaS)
 - Commercial off-the-shelf (COTS)
- **In-House Developed Software**
 - Chief programmer teams
 - Structured programming
 - CASE and object-oriented approach
 - Cross-platform development
 - Integrated development environment (IDEs)
 - Documentation



- **Acquiring Databases and telecommunication systems**
 - Need of increased storage or new DBMS
 - To create networks and communication methods for business
 - Same hardware and software acquiring procedures happen here
- **User Preparation**
 - Ready managers, decision makers, employees, other users, and stakeholders for new systems
 - Important, but often ignored area of systems implementation



- **IS personnel: Hiring and Training**

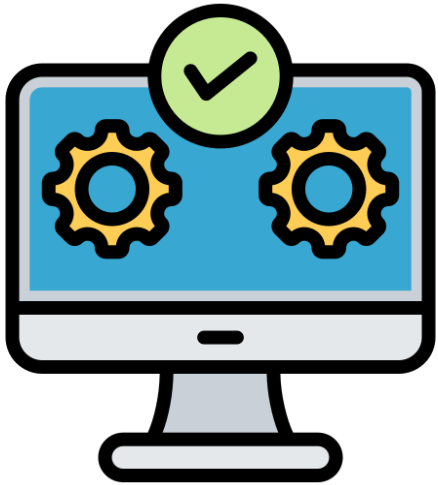
- Training programs should be conducted for the IS personnel who will be using the computer system
- More detailed than user training in the technical aspects of the systems

- **Site Preparation**

- Preparation of the location of a new system
- Larger systems may require special equipment
- Developing IS sites that are energy efficient is important

- **Data Preparation**

- Also called data conversion
- Ensuring all files and databases are ready to be used with new computer software and systems



- **Installation**

- Process of physically placing computer equipment on the site and making it operational
- Normally, manufacturer is responsible for installing computer equipment
- Someone from the organization (usually IS manager) should oversee the process

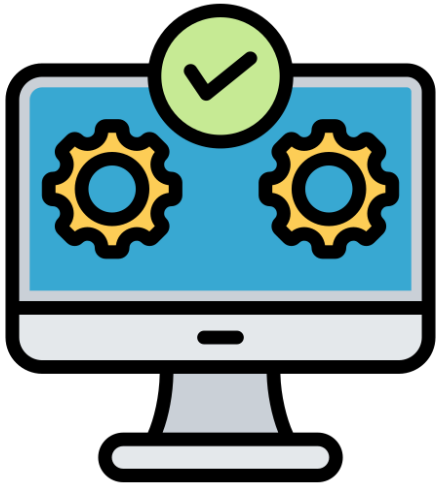
- **Testing**

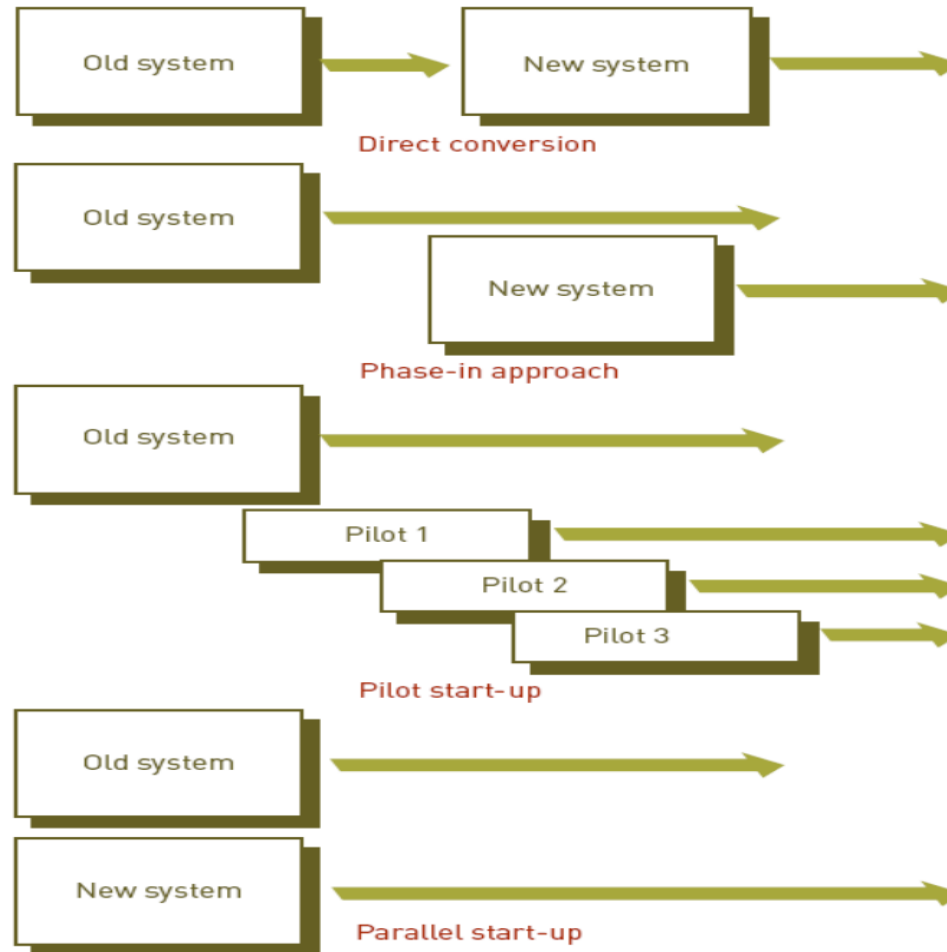
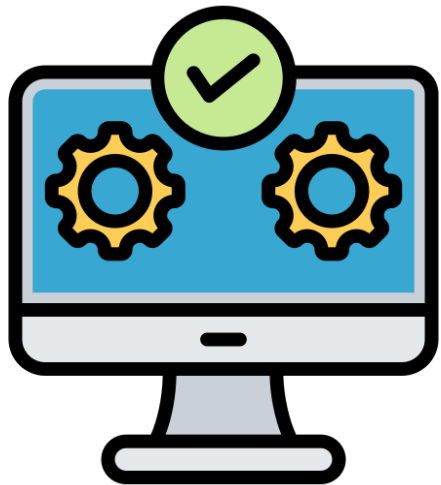
- Unit testing
- System testing
- Volume testing
- Integration testing
- Acceptance testing
- Alpha testing
- Beta testing

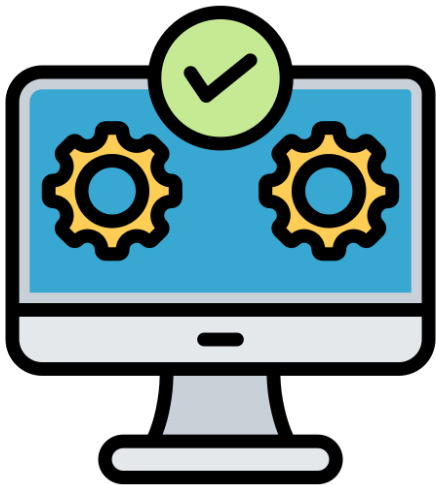


- **Start Up**

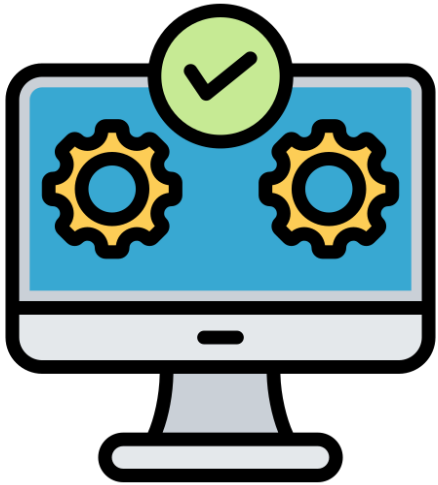
- Process of making the final tested information system fully operational
- Various start up (also called cutover) approaches available:
 - **Direct Conversion**
 - **Phase-in approach**
 - **Pilot start-up**
 - **Parallel start-up**







- **Systems operation**
 - Use of a new or modified system to see whether it has the performance and benefits as perceived
- **Systems maintenance**
 - Checking, changing, and enhancing the system to make it more useful in achieving user and organizational goals



- **Reasons for Maintenance**

- Changes in business processes
- New requests from stakeholders, users, and managers
- Bugs or errors in program
- Technical and hardware problems
- Corporate mergers and acquisitions
- Government regulations

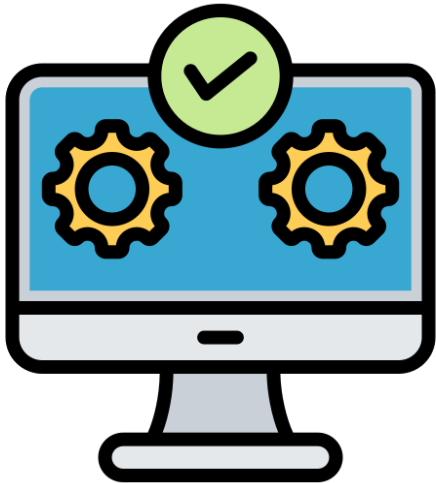
- **Types of maintenance**

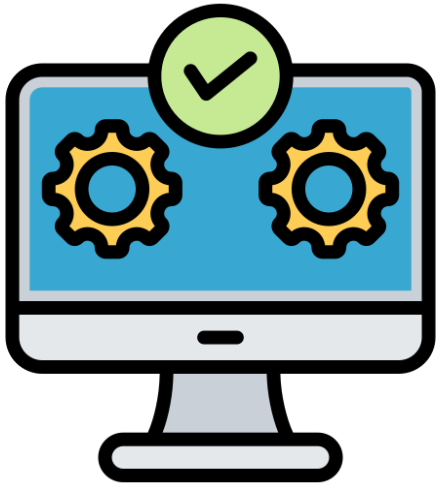
- Slipstream upgrade
- Patch
- Release
- Version



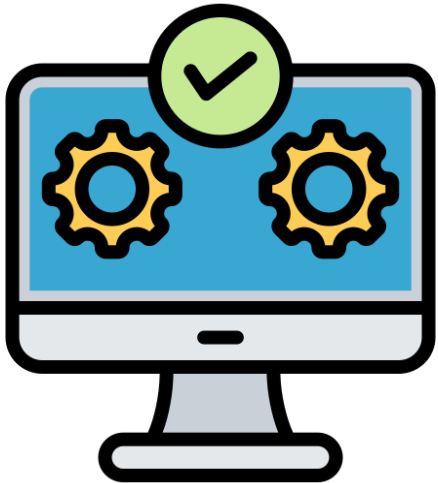
- **Performing Maintenance**

- **Maintenance team**
- Responsible for modifying, fixing, and updating existing software
- Maintenance function
- Becoming more automated

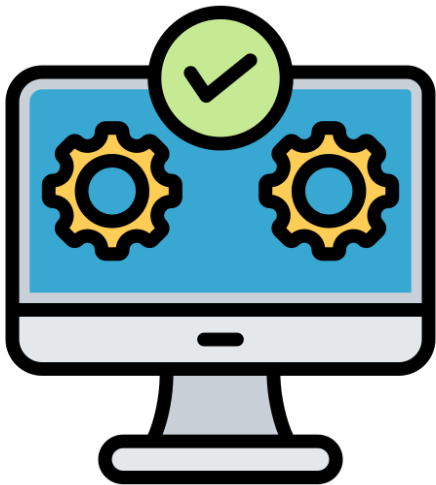




- **Final step of systems development**
- **Analyzes systems to make sure that they are operating as intended**
- **Types of Review procedures:**
 - *Event-driven review*
 - Triggered by a problem or opportunity
 - *Time-driven review*
 - Performed after a specified amount of time

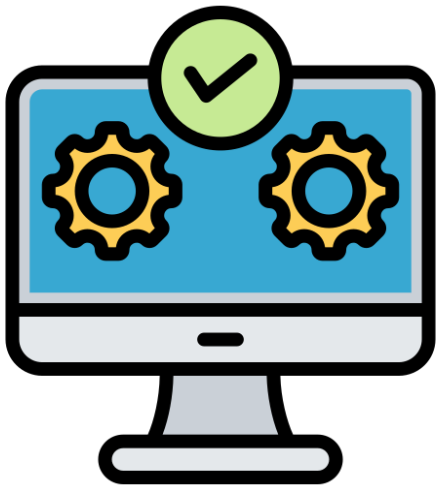


- **Monitoring the system**
 - Number of errors encountered
 - Amount of memory required
 - Amount of processing or CPU time needed
 - Other problems
- **System performance products**
 - Software that measures all components of the computer-based information system

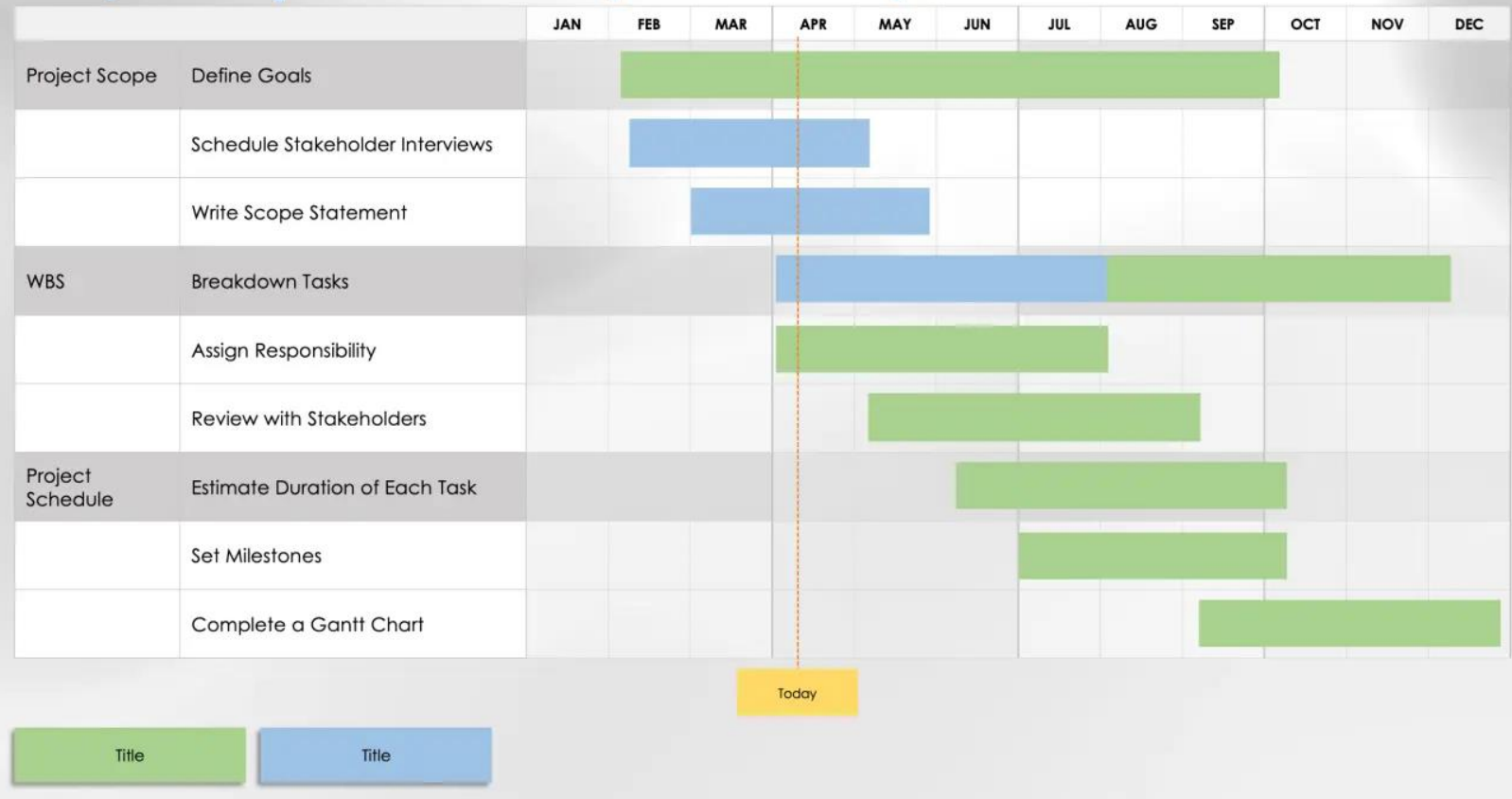


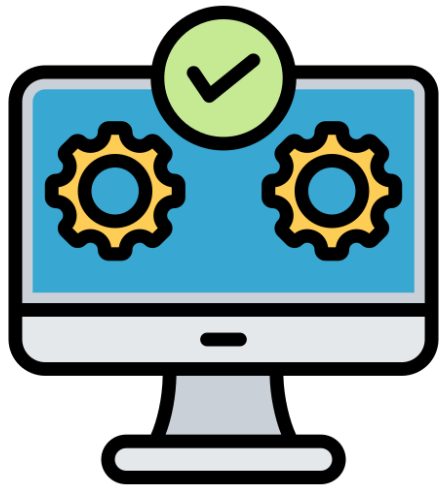
Project Plan Template by Project Phase





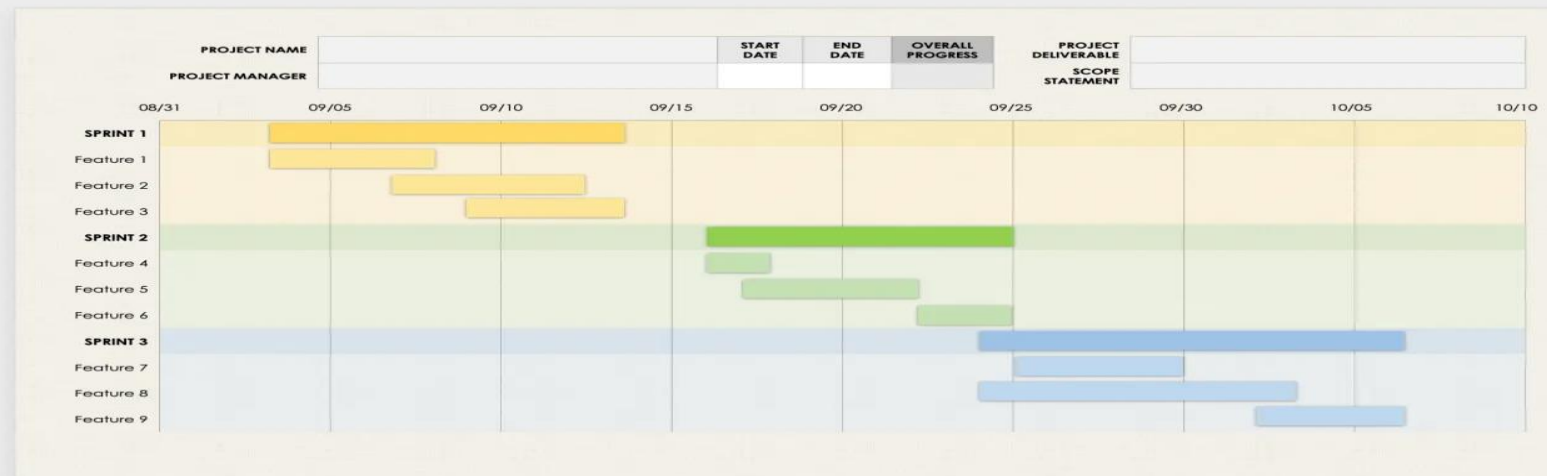
Simple Project Plan Template Example

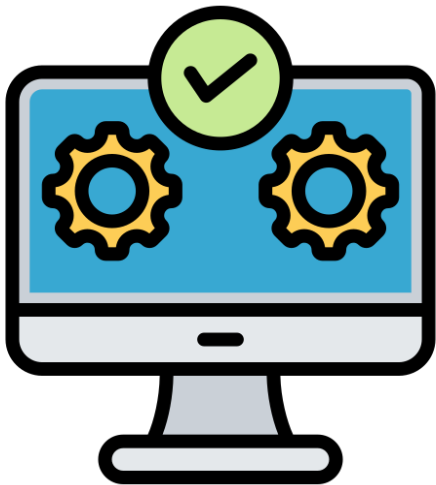




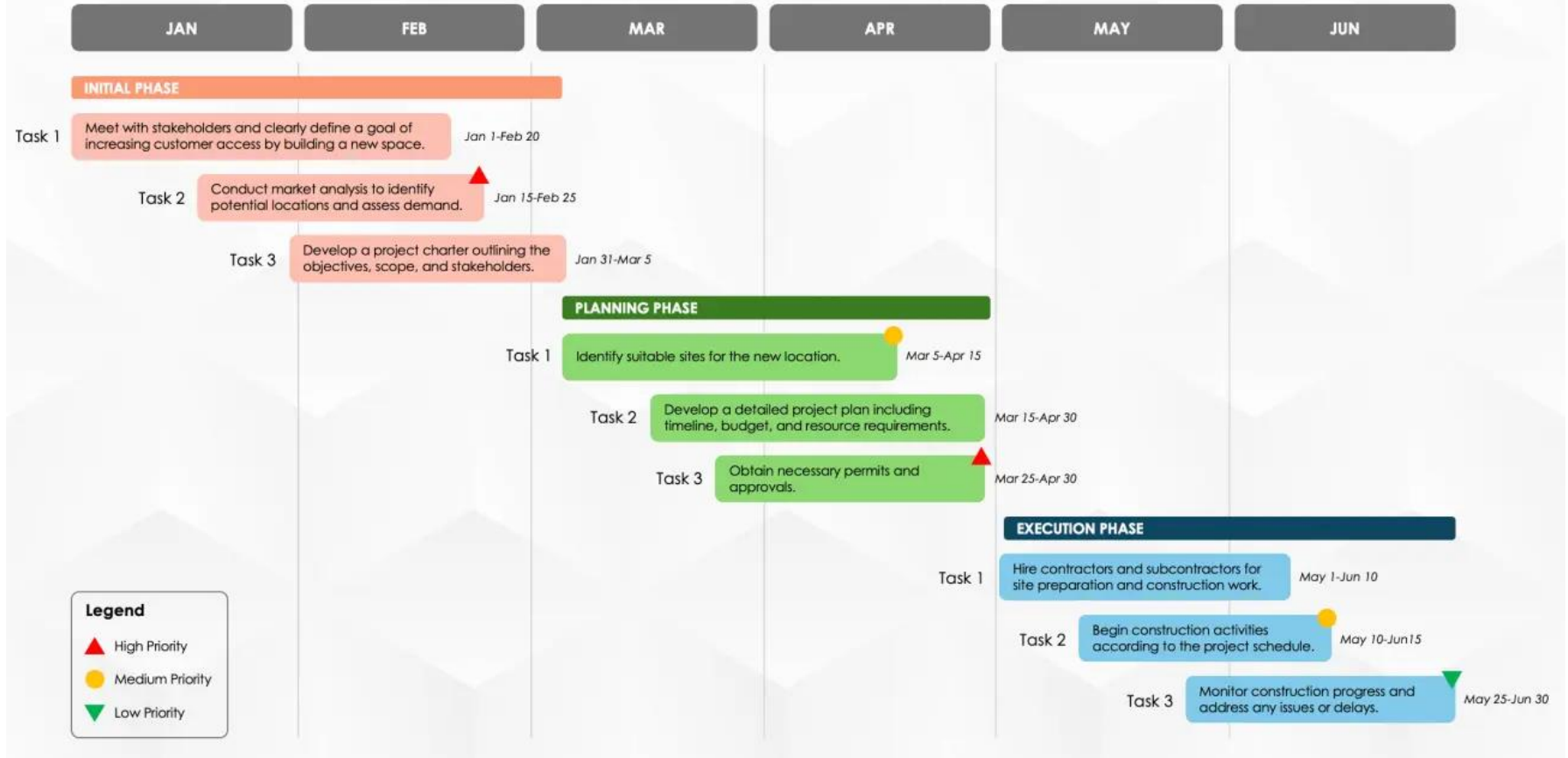
Agile Project Plan Template

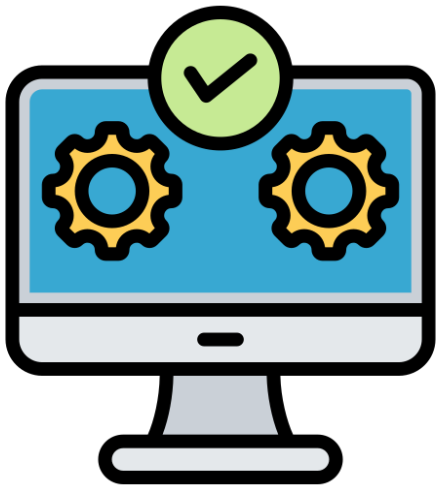
PROJECT NAME					START DATE	END DATE	OVERALL PROGRESS	PROJECT DELIVERABLE	SCOPE STATEMENT
PROJECT MANAGER									
AT RISK	TASK NAME	FEATURE TYPE	RESPONSIBLE	STORY POINTS	START	FINISH	DURATION in days	STATUS	COMMENTS
No	SPRINT 1								
Yes	Feature 1								
No	Feature 2								
No	Feature 3								
No	SPRINT 2								
No	Feature 4								
Yes	Feature 5								
No	Feature 6								
No	SPRINT 3								
No	Feature 7								
No	Feature 8								
No	Feature 9								



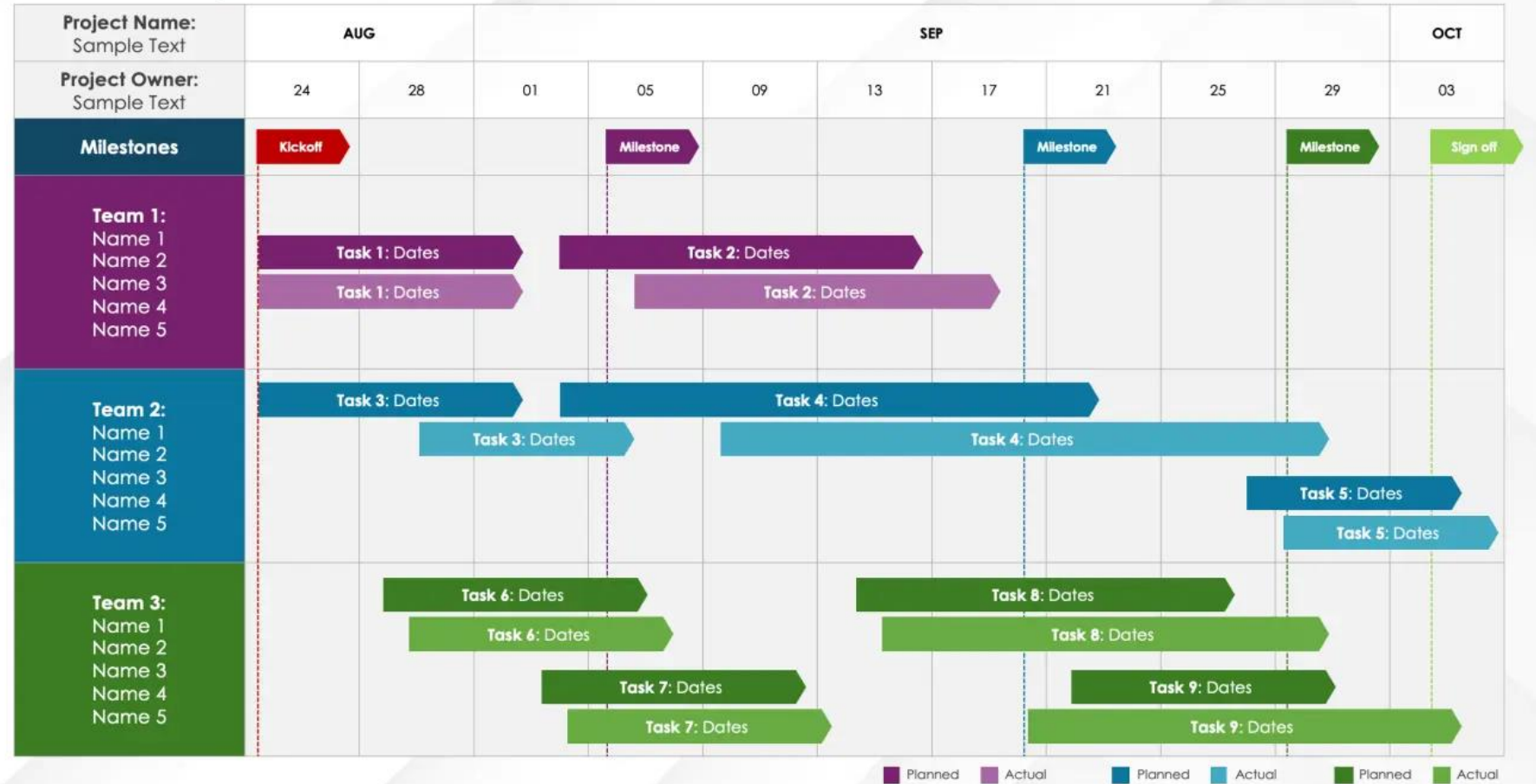


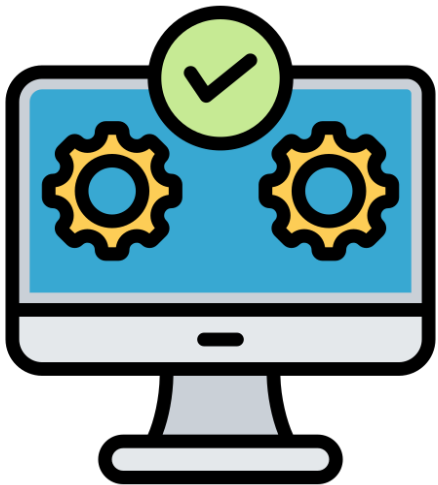
High-Level Project Plan Template





Team Project Plan Template





Three-Year Company Growth Timeline

20XX Opportunities

- Market Expansion Strategy
- Product Line Enhancement
- Increased Market Share
- Enhanced Operational Efficiency

20XX Risks

- Strategic Partnerships
- International Expansion
- Financial Losses
- Operational Disruptions

EXAMPLE Three-Year High-Level Project Plan Template

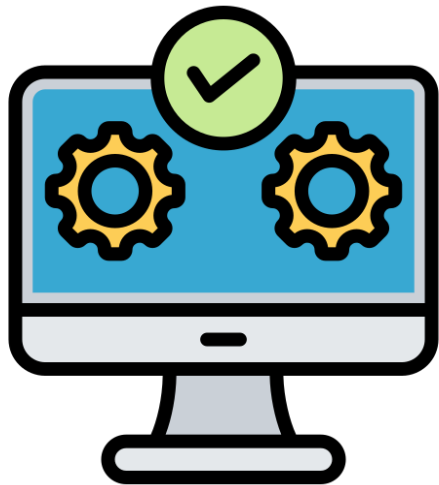
Three-Year Company Resource Planning

	Task	Name	Materials	Start Date	End Date
20XX	Assemble a dedicated marketing team to conduct market research	Olivia Carter	Access to industry reports, survey software, data analysis platforms	01/01	01/01
	Assemble a product development team to enhance existing products	Olivia Kennedy	Prototyping tools, materials for product testing, collaboration software	01/01	01/01
	Description:	Name	Description	01/01	01/01
	Description:	Name	Description	01/01	01/01
	Description:	Name	Description	01/01	01/01
20XX	Hire consultants to guide the implementation of digital tools	David King	Data to research consultants, budget for consulting fees	01/01	01/01
	Request support from the marketing team for executing a brand awareness campaign	Leigh Ellis	Graphic design software, social media management tools, editing software	01/01	01/01
	Description:	Name	Description	01/01	01/01
	Description:	Name	Description	01/01	01/01
	Description:	Name	Description	01/01	01/01
20XX	Assemble a team to establish strategic partnerships and alliances	Justi Pines	Networking tools, travel budget, legal resources for reviewing agreements	01/01	01/01
	Assemble a specialized team to develop our international footprint	Tamara Marshall	International market analysis reports, budget, translation services	01/01	01/01
	Description:	Name	Description	01/01	01/01
	Description:	Name	Description	01/01	01/01
	Description:	Name	Description	01/01	01/01

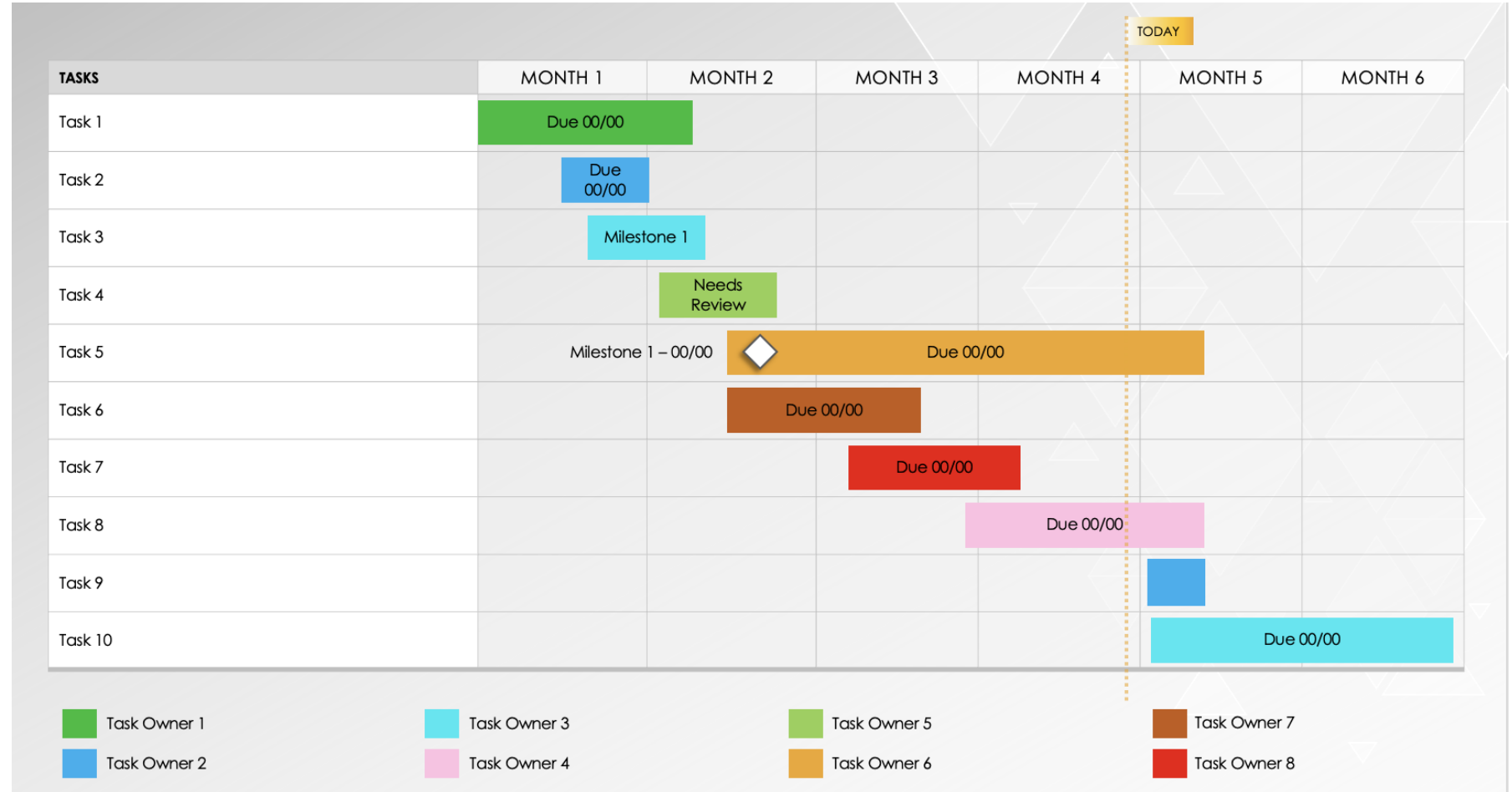
EXAMPLE Three-Year High-Level Project Plan Template

20XX Company Budget

	LARGE				MEDIUM				SMALL				TOTAL			
Item	Description	Category	Subcategory	Unit	Unit Price	Quantity	Unit Price	Quantity	Unit Price	Quantity	Unit Price	Quantity	Unit Price	Quantity	Unit Price	Quantity
Item 1	Description 1	Category 1	Subcategory 1	Unit 1	Unit Price 1	Quantity 1	Unit Price 1	Quantity 1	Unit Price 1	Quantity 1	Unit Price 1	Quantity 1	Unit Price 1	Quantity 1	Unit Price 1	Quantity 1
Item 2	Description 2	Category 2	Subcategory 2	Unit 2	Unit Price 2	Quantity 2	Unit Price 2	Quantity 2	Unit Price 2	Quantity 2	Unit Price 2	Quantity 2	Unit Price 2	Quantity 2	Unit Price 2	Quantity 2
Item 3	Description 3	Category 3	Subcategory 3	Unit 3	Unit Price 3	Quantity 3	Unit Price 3	Quantity 3	Unit Price 3	Quantity 3	Unit Price 3	Quantity 3	Unit Price 3	Quantity 3	Unit Price 3	Quantity 3
Item 4	Description 4	Category 4	Subcategory 4	Unit 4	Unit Price 4	Quantity 4	Unit Price 4	Quantity 4	Unit Price 4	Quantity 4	Unit Price 4	Quantity 4	Unit Price 4	Quantity 4	Unit Price 4	Quantity 4
Item 5	Description 5	Category 5	Subcategory 5	Unit 5	Unit Price 5	Quantity 5	Unit Price 5	Quantity 5	Unit Price 5	Quantity 5	Unit Price 5	Quantity 5	Unit Price 5	Quantity 5	Unit Price 5	Quantity 5
Item 6	Description 6	Category 6	Subcategory 6	Unit 6	Unit Price 6	Quantity 6	Unit Price 6	Quantity 6	Unit Price 6	Quantity 6	Unit Price 6	Quantity 6	Unit Price 6	Quantity 6	Unit Price 6	Quantity 6
Item 7	Description 7	Category 7	Subcategory 7	Unit 7	Unit Price 7	Quantity 7	Unit Price 7	Quantity 7	Unit Price 7	Quantity 7	Unit Price 7	Quantity 7	Unit Price 7	Quantity 7	Unit Price 7	Quantity 7
Item 8	Description 8	Category 8	Subcategory 8	Unit 8	Unit Price 8	Quantity 8	Unit Price 8	Quantity 8	Unit Price 8	Quantity 8	Unit Price 8	Quantity 8	Unit Price 8	Quantity 8	Unit Price 8	Quantity 8
Item 9	Description 9	Category 9	Subcategory 9	Unit 9	Unit Price 9	Quantity 9	Unit Price 9	Quantity 9	Unit Price 9	Quantity 9	Unit Price 9	Quantity 9	Unit Price 9	Quantity 9	Unit Price 9	Quantity 9
Item 10	Description 10	Category 10	Subcategory 10	Unit 10	Unit Price 10	Quantity 10	Unit Price 10	Quantity 10	Unit Price 10	Quantity 10	Unit Price 10	Quantity 10	Unit Price 10	Quantity 10	Unit Price 10	Quantity 10
Item 11	Description 11	Category 11	Subcategory 11	Unit 11	Unit Price 11	Quantity 11	Unit Price 11	Quantity 11	Unit Price 11	Quantity 11	Unit Price 11	Quantity 11	Unit Price 11	Quantity 11	Unit Price 11	Quantity 11
Item 12	Description 12	Category 12	Subcategory 12	Unit 12	Unit Price 12	Quantity 12	Unit Price 12	Quantity 12	Unit Price 12	Quantity 12	Unit Price 12	Quantity 12	Unit Price 12	Quantity 12	Unit Price 12	Quantity 12
Item 13	Description 13	Category 13	Subcategory 13	Unit 13	Unit Price 13	Quantity 13	Unit Price 13	Quantity 13	Unit Price 13	Quantity 13	Unit Price 13	Quantity 13	Unit Price 13	Quantity 13	Unit Price 13	Quantity 13
Item 14	Description 14	Category 14	Subcategory 14	Unit 14	Unit Price 14	Quantity 14	Unit Price 14	Quantity 14	Unit Price 14	Quantity 14	Unit Price 14	Quantity 14	Unit Price 14	Quantity 14	Unit Price 14	Quantity 14
Item 15	Description 15	Category 15	Subcategory 15	Unit 15	Unit Price 15	Quantity 15	Unit Price									

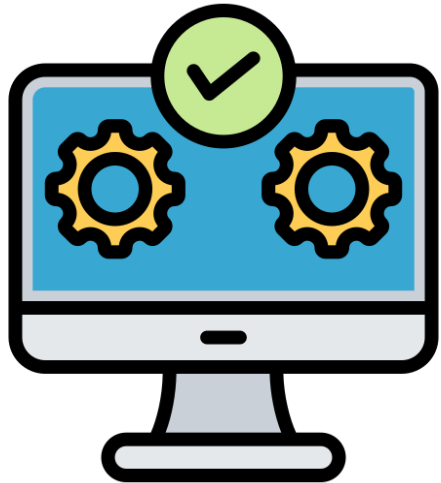


SIMPLE GANTT CHART TEMPLATE





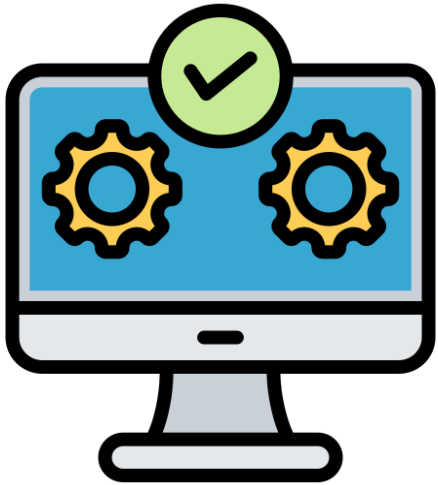
INTERNAL COMMUNICATIONS PLAN TEMPLATE



INTERNAL AND EXTERNAL COMMUNICATION PLAN					
STAKEHOLDERS	POWER/INTERST	KEY INTEREST & ISSUES	COMMUNICATI ON VEHICLE	FREQUENCY	COMMENTS



Summary



- IS projects have a high failure rate because of improper project management
- IS projects need linking to the business plans, IT goals need to be mapped to corporate goals
- Selecting of projects is based on CSF, portfolio analysis or scoring models
- Change management is crucial for the success of any project
- IS projects need to be developed keeping the organizational and management needs in mind



Thank You