



Microsoft .NET Solution Architectures

Introduction to Designing
Business Solutions

Written by Paul Pu
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Introduction to Designing Business Solutions

- ❑ Microsoft® Solutions Framework (MSF), a set of models, principles, and guidelines for designing applications.
- ❑ MSF Process Model and its various phases.
- ❑ key activities that you perform in designing an application, and about the deliverables associated with those activities
- ❑ case study that illustrates the concepts and practices



Introduction to Designing Business Solutions

What Is a Solution?

In every day use, a solution is simply a strategy or method to solve problem. It has become common marketing jargon in the IT industry to describe products as "solutions." As such, there is confusion, even skepticism, over exactly what "solution" means.

In MSF, the term "solution" has a very specific meaning. **solution** is the coordinated delivery of the elements needed (such as technologies, documentation, training, and support) to successfully respond to a **unique customer's business problem**.

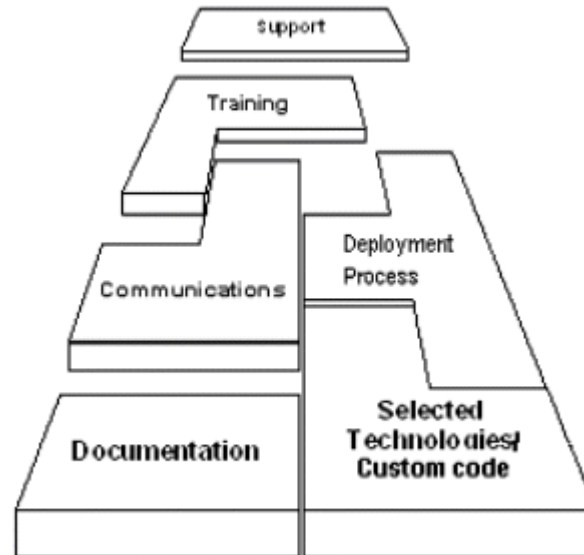


Introduction to Designing Business Solutions

Products	MSF Solution
Designed for the needs of a mass market.	Designed or tailored to fit individual customer needs.
Delivered as a packaged goods or "bits" (by way of download, CD-ROM, and so on).	Delivered as a project.



Introduction to Designing Business Solutions



Elements of a Solution

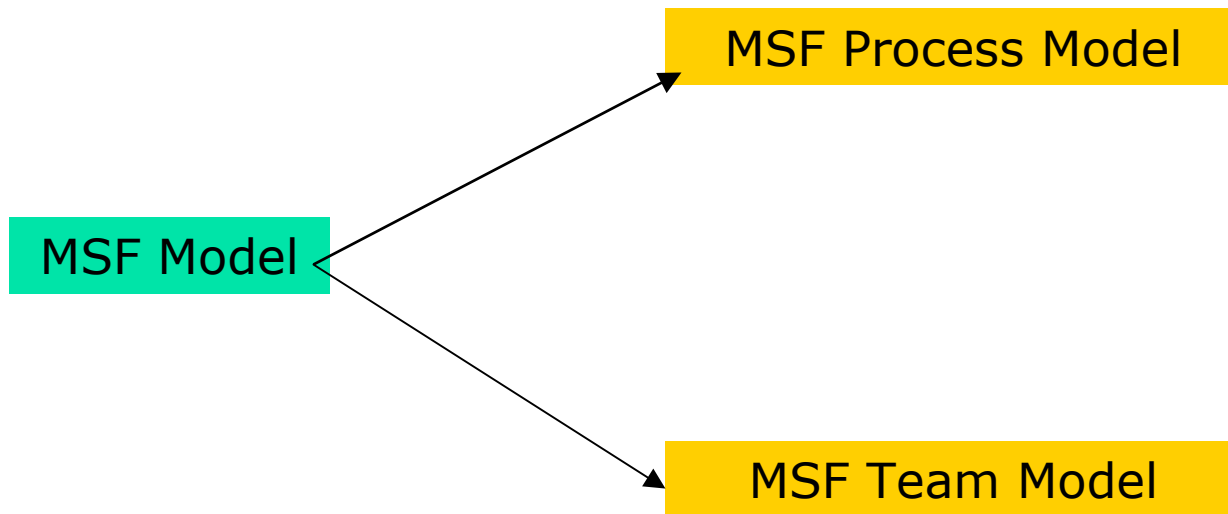


Overview of Microsoft Solutions Framework

- MSF provides a set of models, principles, and guidelines for designing and developing enterprise solutions in a way that ensures that all elements of a project, such as people, processes, and tools, can be successfully managed.
- MSF also provides proven practices for planning, designing, developing, and deploying successful enterprise solutions.



Overview of Microsoft Solutions Framework





Overview of Microsoft Solutions Framework

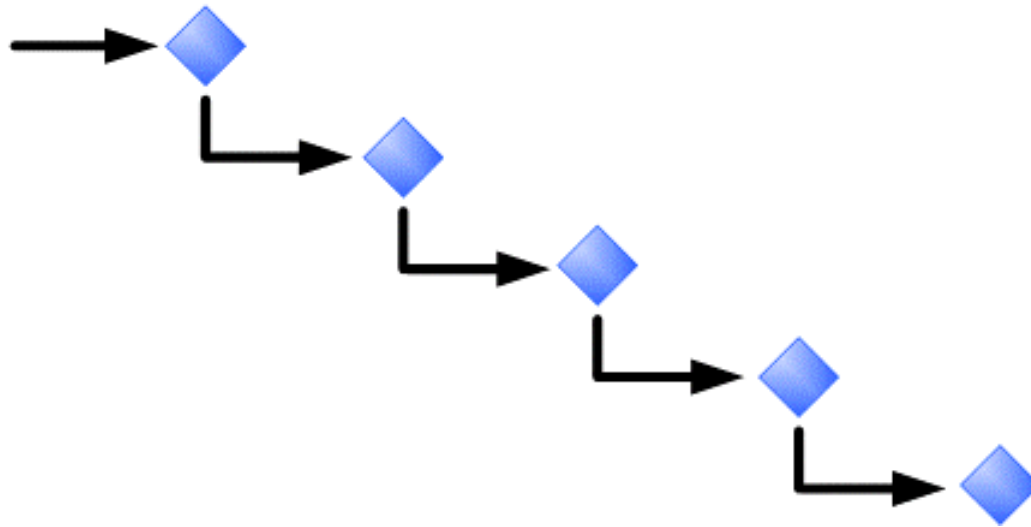
The **waterfall model** and the **spiral model** are two popular process models used in the information technology industry.

Waterfall model:

This model uses milestones as transition and assessment points. In the waterfall model, each set of tasks must be completed before the next phase can begin. The waterfall works best for projects where it is feasible to clearly delineate a fixed set of unchanging project requirements at the start. Fixed transition points between phases facilitate schedule tracking and assignment of responsibilities and accountability.



Overview of Microsoft Solutions Framework



Waterfall mode1

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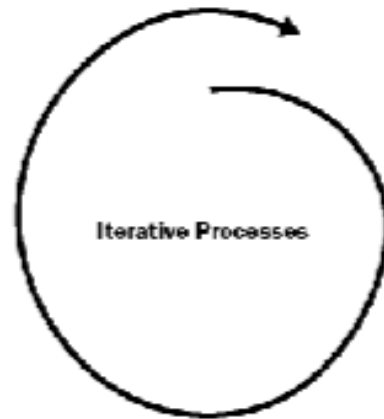
Overview of Microsoft Solutions Framework

Spiral model:

This model focuses on the continual need to refine the requirements and estimates for a project. The spiral model, shown in Figure 2, can be very effective when used for rapid application development on a very small project. This approach stimulates great synergy between the development team and the customer because the customer provides feedback and approval for all stages of the project. However, since the model does not incorporate clear checkpoints, the development process may become chaotic.



Overview of Microsoft Solutions Framework



Spiral model

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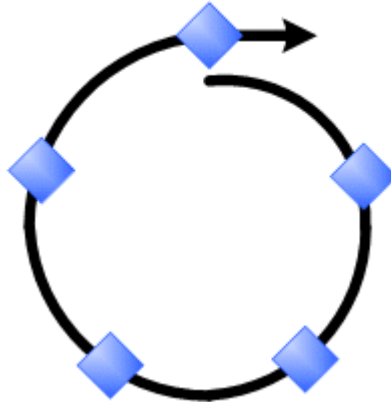
Microsoft Solutions Framework: Process Model

MSF process model:

combines the best principles of the waterfall and spiral models. It derives the benefits of predictability from the milestone-based planning of the waterfall model, as well as the benefits of feedback and creativity from the spiral model.



Microsoft Solutions Framework: Process Model



MSF process model

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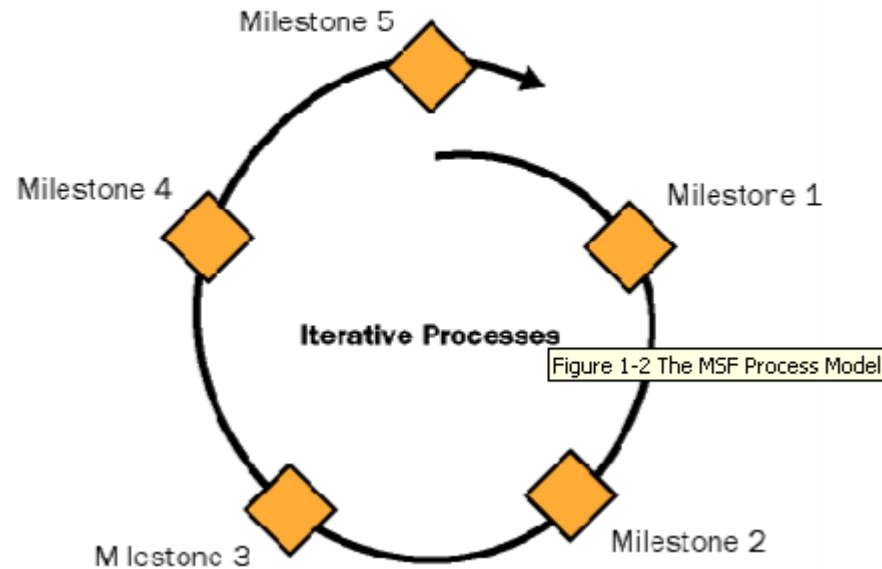
Microsoft Solutions Framework: Process Model

Characteristics of the Process Model

- ❑ A phase and milestone-based approach.
- ❑ An iterative approach.
- ❑ An integrated approach to building and deploying solutions.



Microsoft Solutions Framework: Process Model

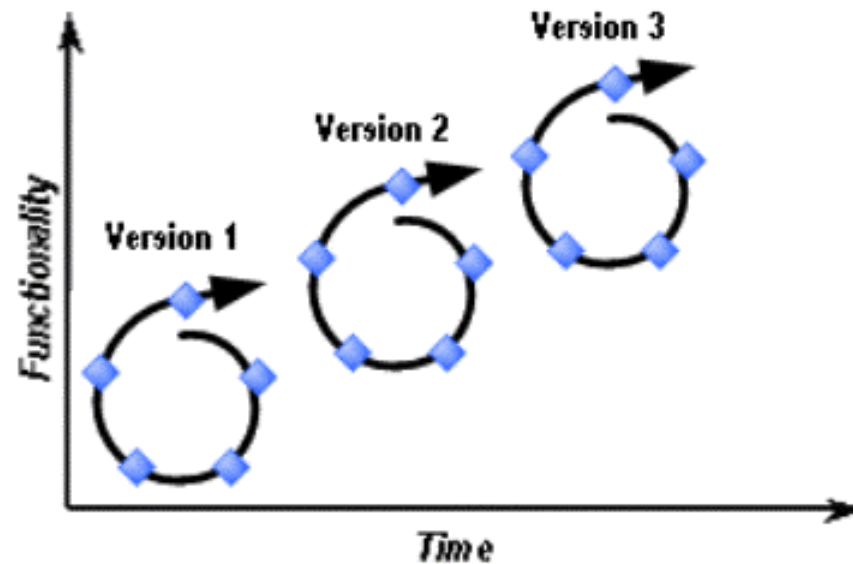


An iterative approach

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Microsoft Solutions Framework: Process Model



A phase and milestone-based approach



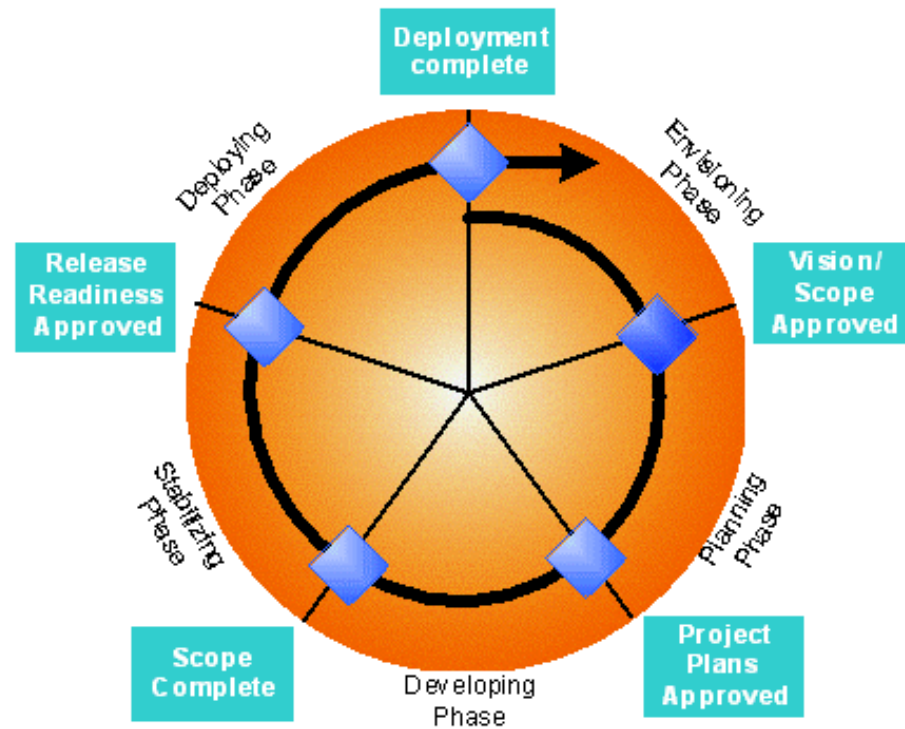
Microsoft Solutions Framework: Process Model

Phases of the MSF Process Model

- Envisioning
- Planning
- Developing
- Stabilizing
- Deploying



Microsoft Solutions Framework: Process Model



MSF Process Model Phases and Milestones



Microsoft Solutions Framework: Team Model



Team Model Role Clusters



Microsoft Solutions Framework: Team Model

- ❑ **Product management.** Responsible for managing customer communications and expectations. During the design phase, product management gathers customer requirements and ensures that business needs are met. Product management also works on project communication plans such as briefings to the customers, marketing to users, demonstrations, and product launches.
- ❑ **Program management.** Responsible for the development process and for delivering the solution to the customer within the project constraints.
- ❑ **Development.** Responsible for developing the technology solution according to the specifications provided by the program management role.
- ❑ **Testing.** Responsible for identifying and addressing all product quality issues and approving the solution for release. This role evaluates and validates design functionality and consistency with project vision and scope.



Microsoft Solutions Framework: Team Model

- **Release management.** Responsible for smooth deployment and operations of the solution. Release management validates the infrastructure implications of the solution to ensure that it can be deployed and supported.
- **User experience.** Analyzes performance needs and support issues of the users and considers the product implications of meeting those needs.



Microsoft Solutions Framework: Team Model

Additional team members

In addition to the roles defined previously, the project team also includes the project stakeholders, though they are not part of the MSF Team Model. These stakeholders include the following roles:

- ❑ Project sponsor. One or more individuals initiating and approving the project and its result.
- ❑ Customer (or business sponsor). One or more individuals who expect to gain business value from the solution.
- ❑ End user. One or more individuals or systems that interact directly with the solution.
- ❑ Operations. The organization responsible for the ongoing operation of the solution after delivery.



Microsoft Solutions Framework: Team Model

Overlaid on this structure are feature teams. These are smaller sub-teams that organize one or more members from each role into a matrix organization. These teams are then assigned a particular feature set and are responsible for all aspects of it, including its design and schedule. For example, a feature team might be dedicated to the design and development of printing services.



Microsoft Solutions Framework: Team Model

Feature Teams





Microsoft Solutions Framework: Team Model

Sharing Roles

In a small project, individuals on the project team can take on more than one role. Note that combining roles on a project introduces risk to the project. Therefore, it is important to assign appropriate roles to the members. For example, it is not recommended that an individual be assigned to both the program management role and the development role.



Microsoft Solutions Framework: Team Model

	Product Management	Program Management	Development	Test	User Experience	Release Management
Product Management		N	N	P	P	U
Program Management	N		N	U	U	P
Development	N	N		N	N	N
Test	P	U	N		P	P
User Experience	P	U	N	P		U
Release Management	U	P	N	P	U	

P = Possible

U = Unlikely

N = Not Recommended



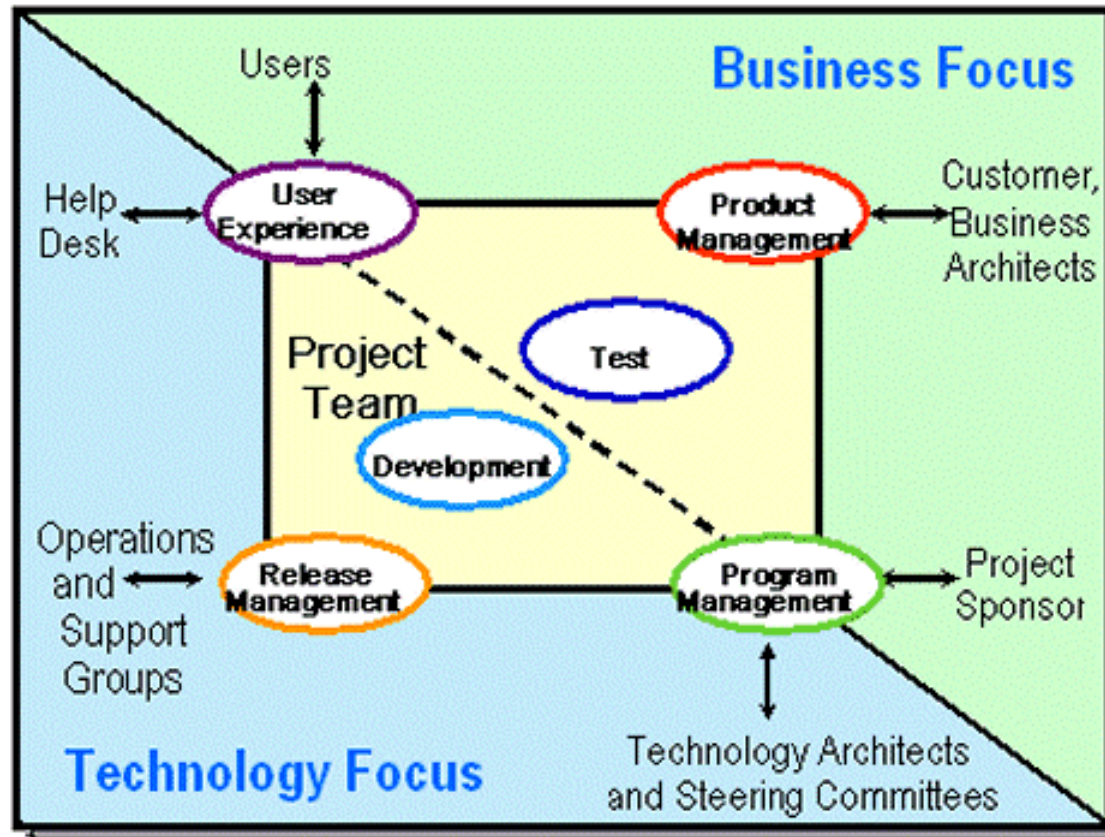
Microsoft Solutions Framework: Team Model

External Coordination—Who Is Accountable?

In order for a team to be successful, it must interact, communicate, and coordinate with other external groups. These range from customers and users to other development teams. In most cases, the customer requires explicit accountability for the solution to reside within one point of contact on the team. And although the team of peers requires a shared accountability within for the successful delivery of the solution, it is important to have a clear distinction of the accountability and reporting structure documented in the communications plan so that both the customer and the development team know how who on the team is responsible for facilitating this information.



Microsoft Solutions Framework: Team Model



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MSF: Project Management Discipline

What Is Project Management?

Project management is an area of knowledge, skills, tools and techniques used to achieve project objectives within agreed upon parameters of quality, cost, schedule and constraints.

Project Management area

- ❑ Project planning/Tracking/Change Control
- ❑ Scope Management
- ❑ Schedule Management
- ❑ Cost Management
- ❑ Staff Resource Management
- ❑ Communications Management
- ❑ Risk Management
- ❑ Quality Management
- ❑ Procurement



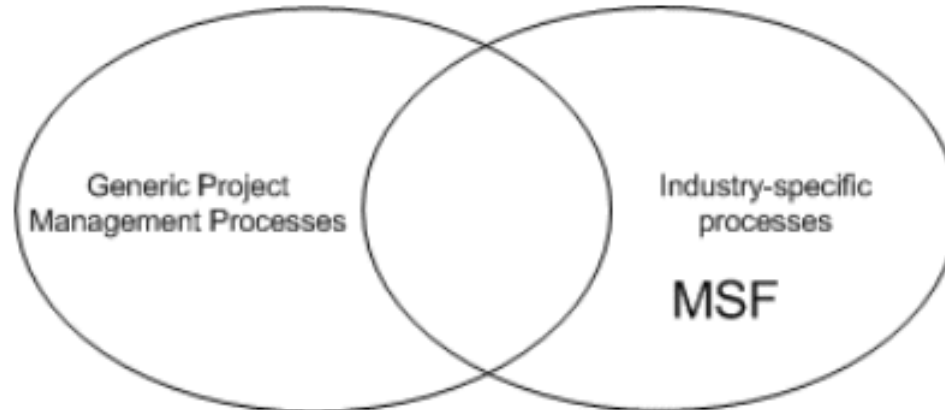
MSF: Project Management Discipline

Project Management and IT Specific Processes

In general, project management consists of knowledge areas and techniques that broadly apply to any industry area that does projects. Each industry area (for example aerospace, building construction, IT, and so on.) has specific processes, phases, roles, and practices that work best for that industry. In order to have successful projects, these industry-specific processes must be supplemented with generic project management practices.



MSF: Project Management Discipline



Relationship of MSF to Project Management Discipline



MSF: Project Management Discipline

Project Manager Role Is Encompassed in Program Management

In smaller projects, all the functional responsibilities are typically handled by a single program manager. **As the size and complexity of a project grows,** this role cluster is broken out into two branches of specialization: one dealing with architecture and specifications and the other dealing with project management.



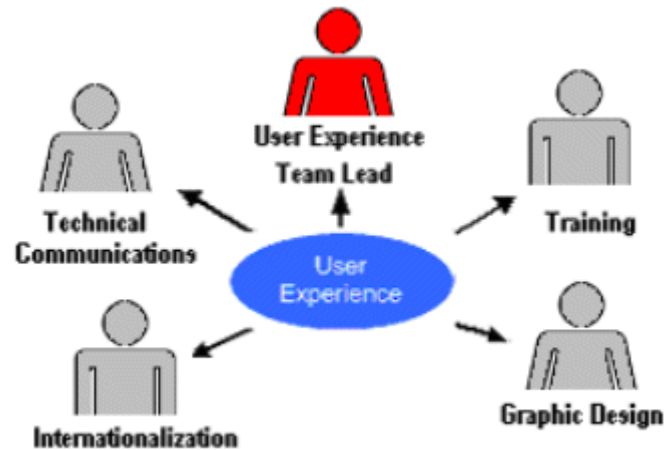
MSF: Project Management Discipline

Function Teams

Function teams are subteams that exist within a role and are formed when tasks within a role are large enough to require dedicated resources. A key aspect of a function team is not simply that the role requires more than one person to fulfill, but that there is a delineation of tasks among its members.



MSF: Project Management Discipline



Sample Function Team for User Experience



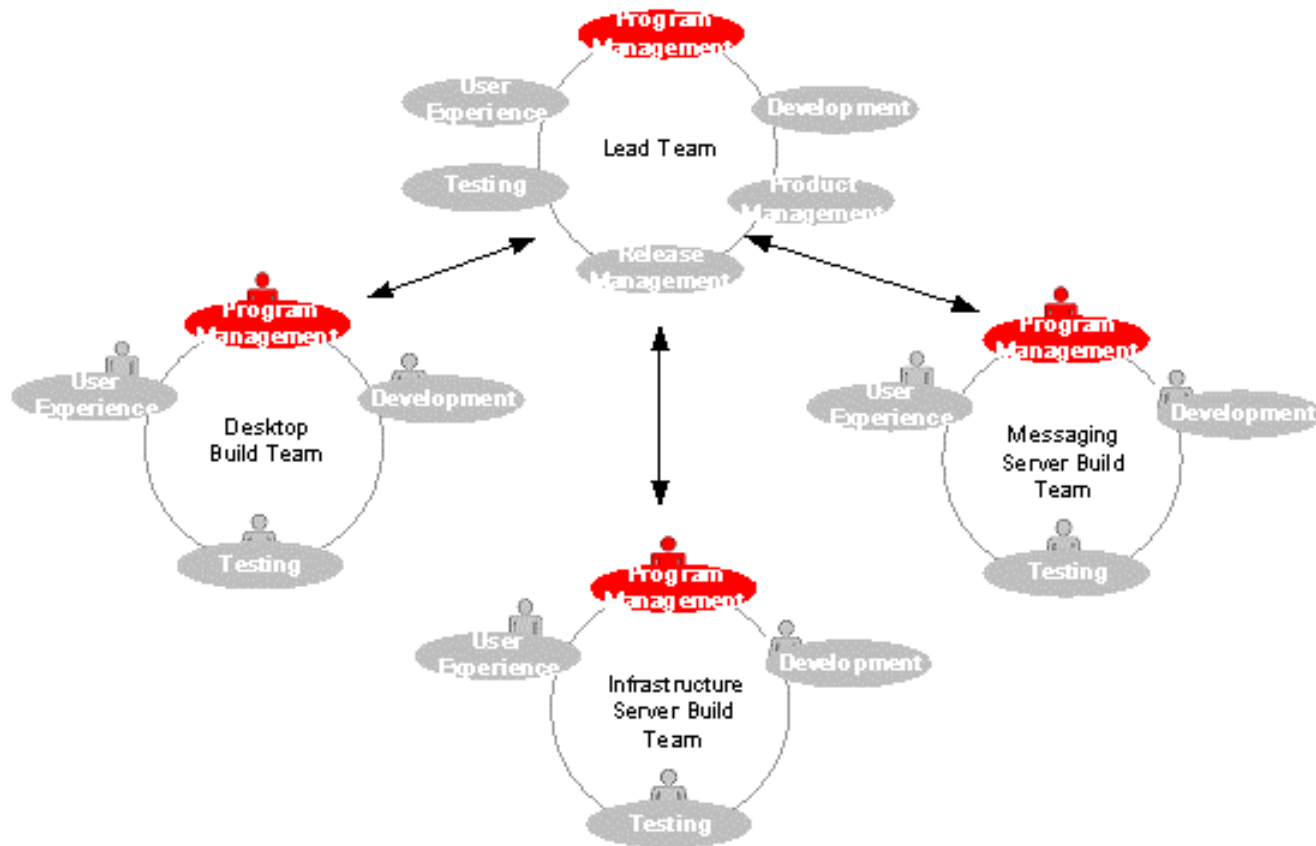
MSF: Project Management Discipline

Feature Teams

Feature teams are multidisciplinary subteams that are organized around a particular feature of the solution. The teams are drawn from the six roles that make up the team model. **The program management role is also the team lead that provides the integration point with the larger team.** The feature team structure is a good candidate for remote or "off-shore" subteams building fairly discrete components for the solution.



MSF: Project Management Discipline





MSF: Project Management Discipline

Project Management Responsibilities

How project management activities are distributed among team members at various levels of scale and complexity. This section describes these activities.



MSF: Project Management Discipline

Project Management responsibility areas

<u>Team Leads</u>	Planning/Tracking/Change Control	Scope Management	Schedule Management	Cost Management	Staff Resource Management	Communication Management	Risk Management	Procurement Management	Quality Management
Program Management	●	●	●	●	●	●	●	●	●
Product Management	○	○	○		○	●	○		○
Development	○	○	○		○	○	○		○
Testing	○	○	○		○	○	○		○
User Experience	○	○	○		○	○	○		○
Release Management	○	○	○		○	○	○	●	○

- = at overall project level
- = at sub-team level

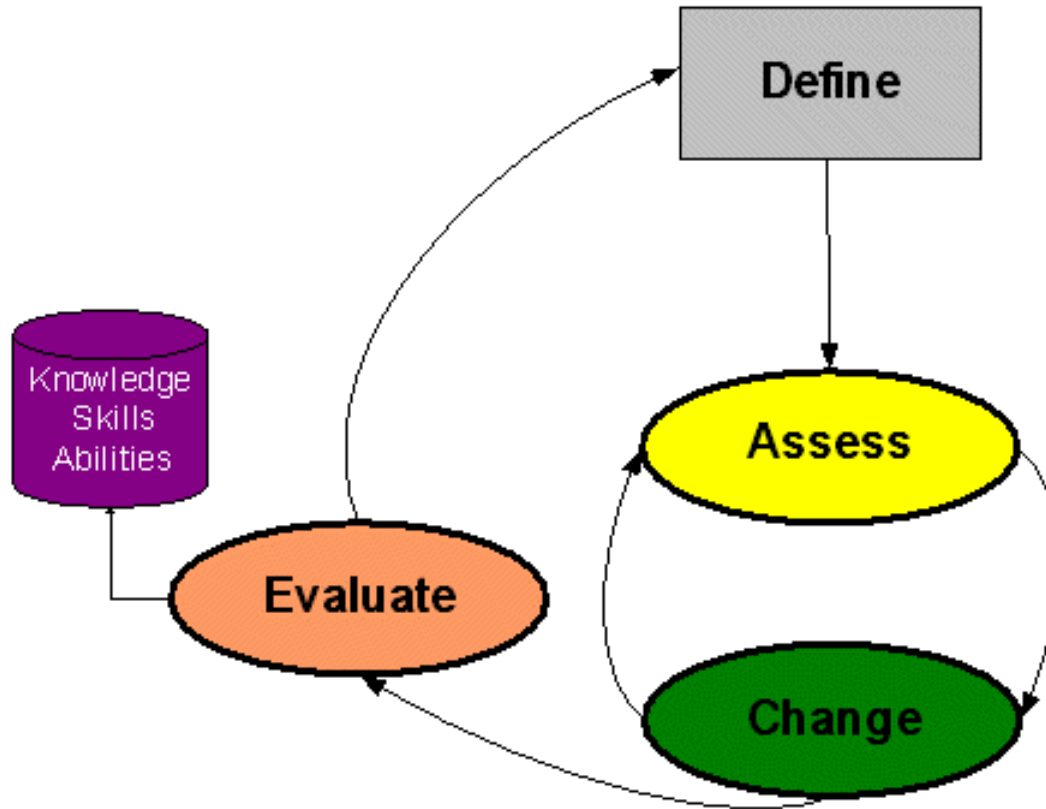


MSF Readiness Management Discipline

The MSF readiness management discipline includes a process to help you develop the knowledge, skills, and abilities (KSAs) needed to create and manage projects and solutions. The following figure illustrates the four steps of the readiness management process: define, assess, change, and evaluate.



MSF Readiness Management Discipline



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MSF Readiness Management Discipline

Define. During this step, the team identifies the scenarios, competencies, and proficiency levels needed to successfully plan, create, and manage the solution. This is also the time to determine which competencies and corresponding proficiency levels are required for each role in the organization. The assigned role determines whether an individual needs to be proficient in one or many of the defined competencies.

Assess. It is during this step that the team begins analysis of the current competencies as they relate to the various job roles. The purpose of this analysis is to determine the skills of individuals within each of these roles. The team then compares the competencies identified in the previous step to the current competencies. Comparing current skill levels to required skill levels is necessary to develop a learning plan, so that team members can reach the necessary competency levels.



MSF Readiness Management Discipline

Change. During this step, team members begin to improve their skills by means of structured learning to raise current proficiency levels to the desired levels.

Evaluate. During this step, the team determines whether the learning plans were effective and whether the lessons learned are being successfully implemented on the job.



MSF Risk Management Process

The MSF risk management discipline advocates proactive risk management, continuous risk assessment, and decision making throughout the project life cycle. The team continuously assesses, monitors, and actively manages risks until they are either resolved or turn into problems to be handled as such.



MSF Risk Management Process



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MSF Risk Management Process

- **Risk identification** allows individuals to identify risks so that the team becomes aware of any potential problems.
- **Risk analysis** transforms the estimates or data about specific project risks that emerges during risk identification into a form the team can use to make decisions about prioritization.
- **Risk planning** uses the information obtained from risk analysis to formulate strategies, plans, and actions.
- **Risk tracking** monitors the status of specific risks and documents the progress in their respective action plans.
- **Risk control** is the process of executing risk action plans and their associated status reporting.
- **Risk learning** formalizes the lessons learned and relevant project documents and tools, and records that knowledge in reusable form for use within the team and by the enterprise.



The Tradeoff Triangle

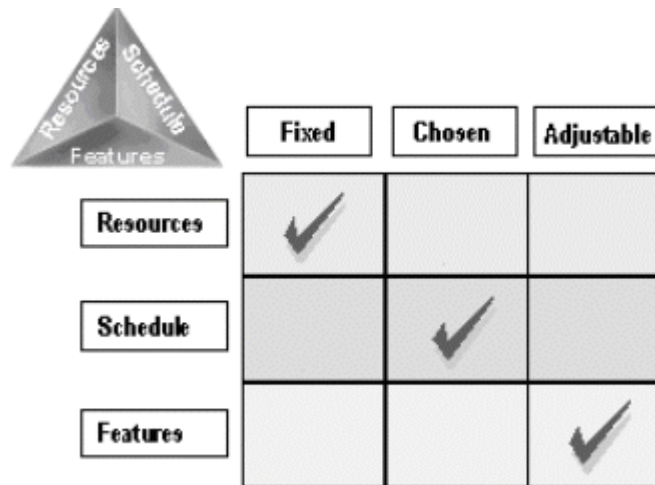
In projects, there is a well-known relationship between the project variables of resources (people and money), schedule (time), and features (scope). These variables exist in a triangular relationship





The Tradeoff Triangle

Project Tradeoff Matrix



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The Tradeoff Triangle

Logical sentence possibilities are:

- Given fixed resources, we will choose a schedule and adjust the feature set as necessary.
- Given fixed resources, we will choose a feature set and adjust the schedule as necessary.
- Given a fixed feature set, we will choose a level of resources and adjust schedule as necessary.
- Given a fixed feature set, we will choose a schedule and adjust resources as necessary.
- Given a fixed schedule, we will choose a level of resources and adjust the features set as necessary.
- Given a fixed schedule, we will choose a feature set and adjust resources as necessary.



Phases in the MSF Process Model

What Is the Envisioning Phase?

The MSF process begins with the envisioning phase. **Envisioning can be defined as creating a broad description of the goals and constraints of the project.** In this phase, you identify the team and what the team must accomplish for the customer. The purpose of the envisioning phase is to build a shared vision of the project among all the key stakeholders of the project.



Phases in the MSF Process Model

During the envisioning phase, the program management team identifies the tasks and deliverables that address the requirements and goals of the project. This phase culminates in a vision/scope approved milestone. This milestone indicates that the customer and the team agree about the purpose and direction of the project.



Phases in the MSF Process Model

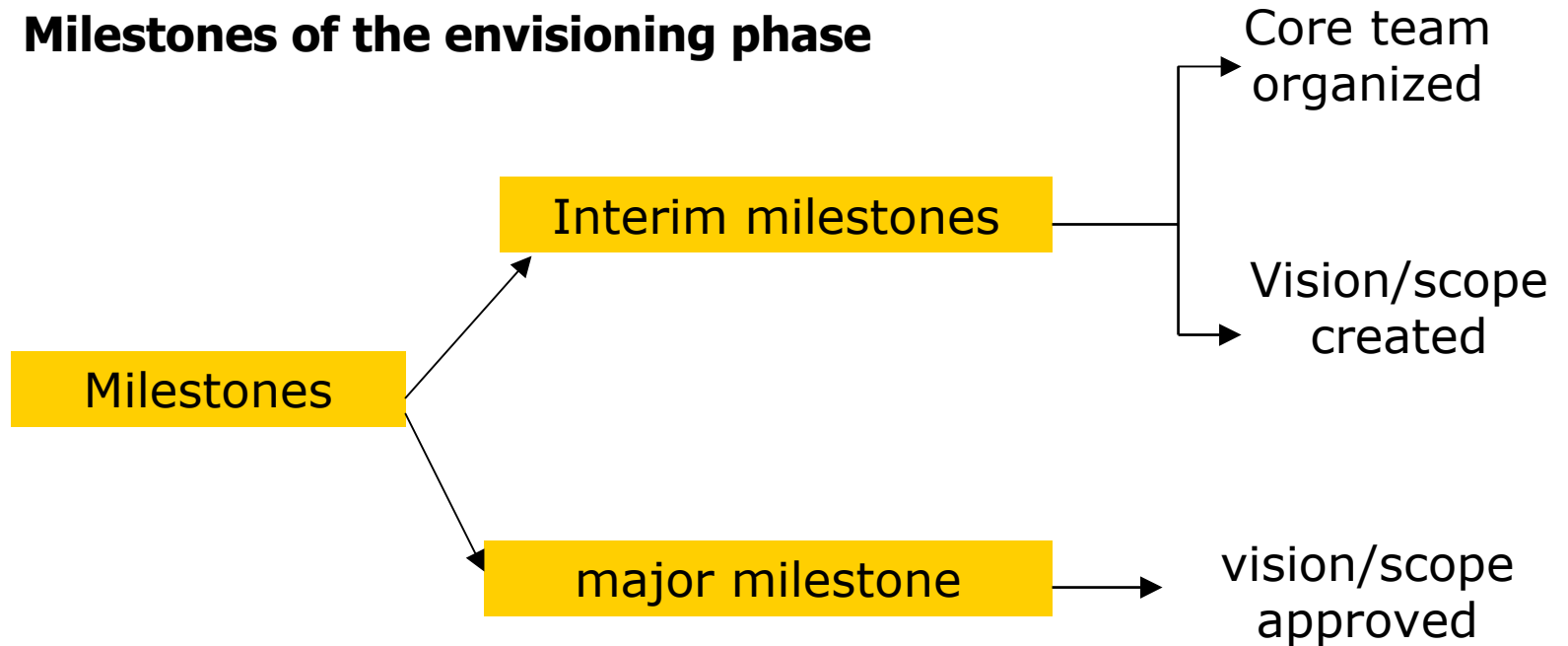
Envisioning process key tasks

- **Setting up the team.**
- **Defining the project structure.**
- **Defining the business goals.**
- **Assessing the current situation.**
- **Creating a vision statement and defining the scope of the project.**
- **Defining requirements and user profiles.**
- **Developing a solution concept.**
- **Assessing risk.**
- **Closing the envisioning phase.**



Phases in the MSF Process Model

Milestones of the envisioning phase





Phases in the MSF Process Model

- The major milestone indicates that the team can progress to the next phase in the MSF Process Model.
- Interim milestones are associated with the various activities that are performed in a phase, such as creating a team and creating a vision/scope document.



Phases in the MSF Process Model

Deliverables of the envisioning phase

The team creates deliverables for each task in the envisioning phase. Together, these deliverables provide context and direction for the team for the remainder of the project, and communicate the project vision and scope to the customer.



Phases in the MSF Process Model

The deliverables that the team creates during the envisioning phase include:

Vision/scope

- Problem statements and business objectives
- A review of the existing processes
- A broad definition of user requirements
- User profiles identifying who will benefit from the solution
- A vision statement and scope definition
- The solution concept outlining the approach the team will take to plan the project
- Solution design strategies



Phases in the MSF Process Model

Project structure

- A description of all MSF team roles and a list of corresponding team members
- A project structure and process standards for the team to follow

Risk assessment

- A preliminary risk assessment
- A list of the primary identified risks
- Plans for mitigating or eliminating the identified risks



Phases in the MSF Process Model

What Is the Planning Phase?

During the planning phase, the team determines what to develop and plans how to create the solution. The team prepares the functional specification, creates a design of the solution, and prepares work plans, cost estimates, and schedules for the various deliverables.

The planning phase involves the analysis of requirements. These requirements can be categorized as business requirements, user requirements, operational requirements, and system requirements. These requirements are used to design the solution and its features and to validate the correctness of the design.



Phases in the MSF Process Model

Design stages in Planning Phase

Conceptual design, in which you view the problem from the **perspective of the users and business requirements** and define the problem and solution in terms of usage scenarios.

Logical design, in which you view the solution from **the perspective of the project team** and define the solution as a set of services.

Physical design, in which you view the solution from **the perspective of the developers** and define the technologies, component interfaces, and services of the solution.



Phases in the MSF Process Model

Design process key tasks during the planning phase

- Developing the solution design and architecture. Identification of business requirements, user requirements, and technologies and the use of this information to design a proposed application model.
- Creating the functional specification. Creation of a functional specification that describes the requirements that must be met by the solution.
- Developing project plans. Identification of and planning for the tasks that will be performed by the project team, and the consolidation of these plans into a master project plan. The master project plan also includes items such as the approach, dependencies, and assumptions for the solution.



Phases in the MSF Process Model

Design process key tasks during the planning phase

- Creating project schedules. Creation of the master project schedule. This schedule consists of milestone-based schedules for each of the team roles in the project team.
- Creating the development, testing, and staging environments. Creation of a separate environment in which to develop and test the solution. This environment is independent of the environment in which the solution will finally be deployed.
- Closing the planning phase. Completion of the milestone approval process. Documentation of the results of completing the tasks performed during the planning phase.



Phases in the MSF Process Model

Milestones of the planning phase

- Technology validation complete.
- Functional specification complete.
- Master plan complete.
- Master project schedule complete.
- Development and test environments set up.



Phases in the MSF Process Model

Deliverables of the planning phase

The planning phase deliverables provide the basis for making future tradeoff decisions. The following deliverables are produced during the planning phase:

- Functional specification
- Risk management plan
- Master project plan and master project schedule



Phases in the MSF Process Model

What Is the Developing Phase?

During the developing phase, the project team creates the solution. This process includes creating the code that implements the solution and documenting the code. In addition to developing code, the team also develops the infrastructure for the solution.



Phases in the MSF Process Model

Development process

- Starting the development cycle.
- Creating a prototype application.
- Developing the solution components.
- Building the solution.
- Closing the developing phase.



Phases in the MSF Process Model

Milestones of the developing phase

- Proof-of-concept application complete.
- Internal builds complete.



Phases in the MSF Process Model

Deliverables of the developing phase

The deliverables of the developing phase include:

- Source code and executable files
- Installation scripts and configuration settings for deployment
- Finalized functional specification
- Performance support elements
- Test specifications and test cases



Phases in the MSF Process Model

What Is the Stabilizing Phase?

During the stabilizing phase, the team performs integration, load, and beta testing on the solution.



Phases in the MSF Process Model

Stabilization process

□ **Testing the solution**

- Component testing
- Database testing
- Infrastructure testing
- Security testing
- Integration testing
- User acceptance and usability testing
- Stress, capacity, and performance testing
- Regression testing
- Recording the number of bugs

Conducting the pilot. Deployment of the solution in a staging area and testing of the solution with actual users and real usage scenarios.



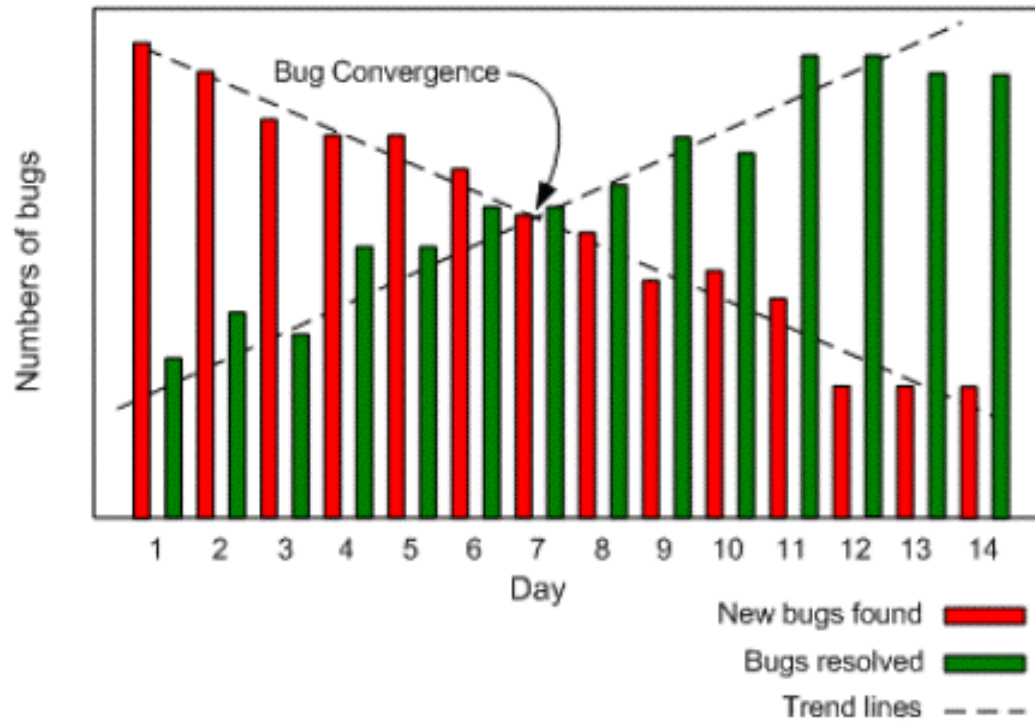
Phases in the MSF Process Model

Milestones of the stabilizing phase

- Bug convergence.
- Zero-bug release.
- Release candidates.
- Golden release.



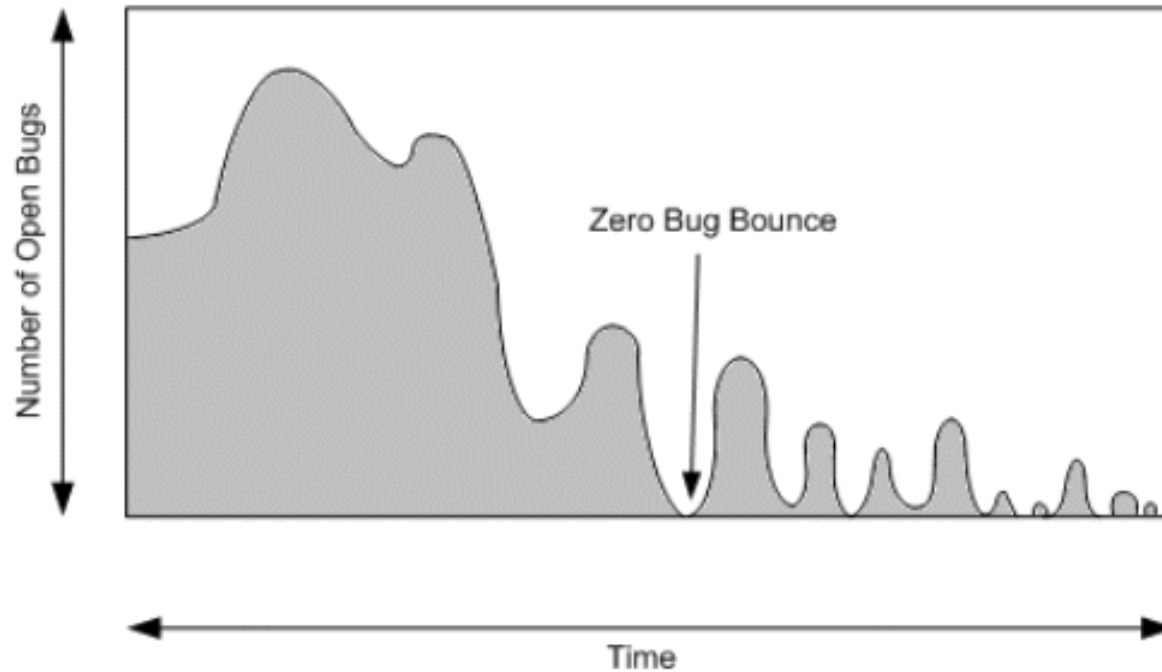
Phases in the MSF Process Model



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Phases in the MSF Process Model



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Phases in the MSF Process Model

Deliverables of the stabilizing phase

- Final release
- Release notes
- Performance support elements
- Test results and testing tools
- Source code and executable files
- Project documents
- Milestone review



Phases in the MSF Process Model

What Is the Deploying Phase?

During this phase, the team deploys the solution technology and site components, stabilizes the deployment, transfers the project to operations and support, and obtains final customer approval of the project. After deployment, the team conducts a project review and a customer satisfaction survey. The deploying phase culminates in the deployment complete milestone.



Phases in the MSF Process Model

Deployment process

- Completion of deployment and operations procedures.
- Deployment and stabilization.
- Project review.



Phases in the MSF Process Model

Milestones of the deploying phase

- Core components deployed.
- Site deployments complete.
- Deployment stable.
- Deployment complete.



Phases in the MSF Process Model

Deliverables of the deploying phase

- Operation and support information systems
- Documentation repository for all versions of documents and code developed during the project
- A training plan
- Project completion report



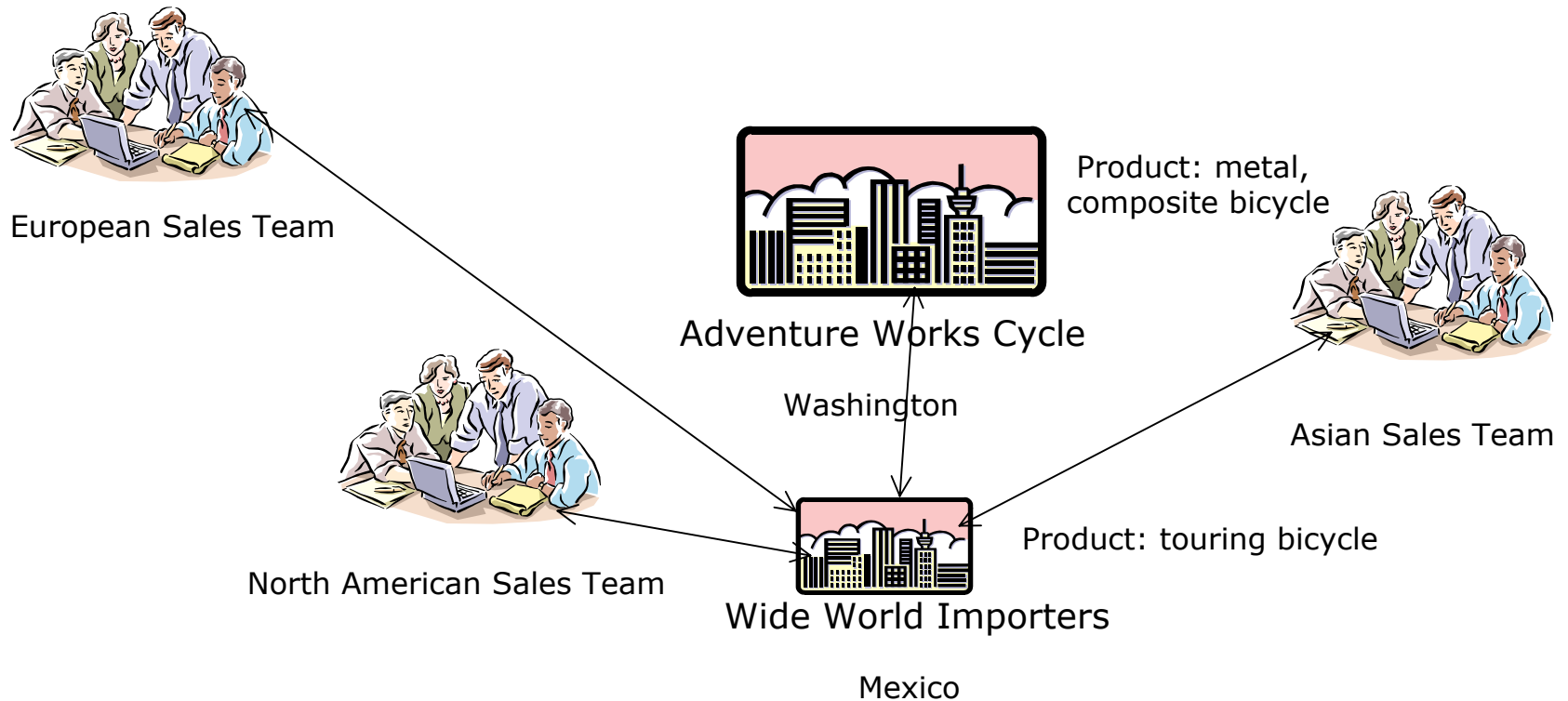
Introducing the Case Study

Adventure Works Cycles Application

Purpose: Enable the **application architect** to understand the nature of business problems that he will need to solve.



Introducing the Case Study Adventure Works Cycles Application



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Introducing the Case Study Adventure Works Cycles Application

The Adventure Works Cycles Case Scenario

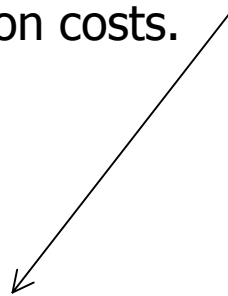
Adventure Works Cycles, a large, multinational manufacturing company, produces and distributes metal and composite bicycles to North American, European, and Asian commercial markets. While its base operation is located in Bothell, Washington, and employs 500 people, several regional sales teams are located throughout the company's market region.

In 2000, Adventure Works Cycles bought a small manufacturing plant, **Wide World Importers**, which is located in Mexico City, Mexico. Wide World Importers manufactures several critical subcomponents for the Adventure Works Cycles product line. These subcomponents are shipped to the Bothell location for final product assembly. In 2001, Wide World Importers became the sole manufacturer and distributor of the touring bicycle product group.



Introducing the Case Study Adventure Works Cycles Application

Adventure Works Cycles is looking to broaden its market share by focusing its sales efforts on the company's best customers, extending product availability through an external **Web site**, and reducing the cost of sales by reducing production costs.



Web Based Application



Introducing the Case Study Adventure Works Cycles Application

Business Problems

Business problems in the Sales department

Business problems in the HR department

Business problems in the Purchasing department

Business problems in the System Administration department

Business problems in the Information Systems department

Business problems in the Engineering department

Business problems in the Wide World Importers department



Introducing the Case Study Adventure Works Cycles Application

Business problems in the Sales department

Customer segmentation and profiling. The sales team needs to be able to extract valuable information from raw data available in the databases to answer questions such as the following:

- What are the early warning signs of problems?
- Who are the best customers across all product lines? With whom should the sales team focus its efforts for building long-term relationships?
- What are customers' issues, categorized according to demographic groups (geographic location, revenue history, and so on)?
- What products are the customers buying and at what rate?



Introducing the Case Study Adventure Works Cycles Application

Business problems in the Sales department

Sales activity.

- The current discount policy allows sales representatives the discretion to discount a particular order up to 15 percent. Sales managers can increase their own discounts or customer discounts up to 20 percent. The product should allow employees to provide appropriate discounts to customers, depending on the employee's role.
- To support sales activity throughout the world, the sales team needs international support, including the ability to have product information, especially dates and pricing, available in multiple languages and currency types.



Introducing the Case Study Adventure Works Cycles Application

Business problems in the Sales department

Internal communication. Each sales representative must receive customer and sales data pertinent only to that representative. Each team manager must receive relevant customer and appointment data along with detailed information for each sales representative on that manager's team. A manager must be able to assign customers to sales representatives based on their relationships with the customers, though usually customers are assigned by region.



Introducing the Case Study Adventure Works Cycles Application

Business problems in the Sales department

Opportunity management. Sales representatives need a method to store and access sales opportunity data and, when a sale is generated, to convert some or all of the information into a sales order without reentering information.



Introducing the Case Study Adventure Works Cycles Application

Business problems in the Sales department

Decision support system. The decision support system should provide the following features:

- Allow marketing/sales staff to query and use customer data to generate standard reports; execute custom queries; obtain information related to promotion tracking, sales forecasting, and customer segmentation; and access third-party data sources and financial evaluation tools.
- Present all customer activity in a unified way, including multiple contacts, conversations, and transactions.
- Allow marketing personnel to initiate new promotions and programs on a multinational basis. Currently, sales representatives do not know how to associate these programs with specific areas for the best impact.
- Identify, analyze, and share all aspects of customer relationships with individuals throughout multiple departments.



Introducing the Case Study Adventure Works Cycles Application

Business problems in the HR department

Decision support system. The decision support system should provide the following features:

- Resume and review management. All resumes and reviews are stored in documents of different formats. A system is needed to provide:
- Unified storage for all file types
- Access to existing employee data (relational database tables) with links to reviews or resumes
- Tools for converting all files types to documents that can be shared internally across departments
- Ability to secure some areas of documents, such as salary information, from designated users
- Ability to search resumes or reviews for keywords or phrases



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Business problems in the HR department

Decision support system. The decision support system should provide the following features:

- Analysis and planning. The HR department needs support for performing the following types of analysis:
- Compensation and benefits analysis, including impact of international currency exchange rates
- Planning to assess the required workforce
- Payroll cost simulations and forecasting



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Business problems in the Wide World Importers Acquisition department

Data transfer. Adventure Works Cycles cannot migrate and transfer data regularly because:

- Wide World Importers does not have a high-speed data transfer utility for moving data from their local database to the three Microsoft SQL Server™ databases in Bothell.
- Adventure Works Cycles has a centralized environment; it needs to enhance the scalability of its production database by transitioning to a distributed environment.
- The data is currently not being transferred by means of a secure network connection.



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Business problems in the Wide World Importers Acquisition department

Administration and support. Wide World Importers has limited Information Systems (IS) support. Departments maintain their own workstations and the servers that support the Oracle database are monitored and maintained by two administrators and the IS manager. The company lacks many of the standardized processes used by Adventure Works Cycles in its daily operations management.



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Business problems in the Purchasing department

Adventure Works Cycles currently uses several vendors to supply various components and raw materials for its product line. The Purchasing department has identified a major supplier who is interested in establishing an Electronic Data Interchange (EDI) with Adventure Works Cycles to transmit critical data and documents such as purchase orders, invoices, payments, and product specifications. Purchasing agents and accounting employees spend more than 50 percent of their time handling these major vendors. After the EDI solution is fully implemented, the Purchasing department manager anticipates a 30 percent increase in employee efficiency in these departments



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The Adventure Works Cycles application must provide the following features:

- The ability for Adventure Works Cycles and the vendors to transmit and receive a variety of data and file types, including structured and semi-structured data
- The ability for vendors to submit their data directly to the Microsoft SQL Server™ purchasing tables
- A Web-based system that provides secure information specific to each vendor
- The ability to automatically detect when the vendors have incoming files or other data ready for Adventure Works Cycles to receive



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Business problems in the Information Systems department

Features for customers

- Online product ordering for customers
- Online order-status checking
- Better search capabilities for product information
- Ability to access explicit sections of engineering product specifications
- Ability to view product information and pricing in international currency and character sets



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Business problems in the Information Systems department

In addition to the Internet site, Adventure Works Cycles has a small intranet Web site consisting of a home page and links to all department sites. Each department is responsible for maintaining its own site and notifying the IS department of any changes that need to be made to its links on the home page. The focus for the intranet site is to improve internal communication. Jose Lugo, Adventure Works Cycles' finance manager, says that it is difficult to get information from one department and supply it to other departments. The department managers want to route more file transactions and data access through the internal Web site. This intranet site must support the following features:



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Business problems in the Information Systems department

The intranet site must support the following features:

- The ability to search for information across departmental sites.
- The ability to change or update to internal information (pricing changes, customer complaints, and so on).
- The availability of product data to all departments. It must be visible and adaptable to multiple needs (sales, marketing, and engineering).



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Business problems in the Production department

The Adventure Works Cycles product line consists of nine bicycle product groups. Each product contains one or more subcomponents, depending on the customer order. Currently, production receives a specification from the Engineering department and uses it to assemble the product. A product clerk enters all the specification information used by production. Certain basic product information is available to customers on the external Web site. However, customers do not have access to the entire product specification. The entire product specification is available to the sales staff from the internal site.

As products move through each assembly area, subcomponents and other value-added materials are added to the product until it reaches the final assembly area.



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Business problems in the Production department

Some of the problems associated with production workflow are as follows:

- Scheduling and production.
- Inventory auditing.



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Business problems in the System Administration department

- ❑ Full availability of Adventure Works Cycles' key systems has become a focus for the System Administration department. Complaints about the amount of system downtime have been increasing steadily.
- ❑ The System Administration department does not have central control of database management functions. As a result, each database group is developing its own practices and procedures. This decentralized approach might not be an optimal use of resources. In addition, the IS staff has requested a better method of monitoring system resources across all operating systems.



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The System Administration department at Adventure Works Cycles must provide the following functionality to address these business problems:

- Availability of services at all times to support Adventure Works Cycles' key systems
- Backup and recovery systems for all databases being used at Adventure Works Cycles, including data stored at World Wide Importers
- Monitoring of all resources across all operating systems



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Business problems in the Engineering department

The Engineering department is responsible for designing the major components for all Adventure Works Cycles products. The team needs a system to manage the documentation needs of the department. Some of the requirements of this system are as follows:

- ❑ Collaborative content management. The department needs an automated system that allows them to control how drawings and specifications are reviewed, approved, and released to manufacturing for use.
- ❑ Accessing and storage of multiple file types. The department needs a consistent method for storing, retrieving, and archiving various files, such as computer-aided design (CAD) drawings and XML product specifications. This system must be linked to the tabular data used to track drawing and specification versions.



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Business tasks

The Adventure Works Cycles application must support the following tasks:

- Customers must be able to place orders.
- Customers must be able to delete orders.
- Application system must be able to reject orders.
- Customers must be able to modify existing orders that are being processed.
- Customers and resellers must be able to review existing orders.
- Customers must be able to create new customer records.
- Customers must be able to edit customer information.
- Customers must be able to submit resumes for employment consideration.
- Customers must be able to retrieve and edit previously submitted resumes.



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Web site requirements

The Internet Web site for Adventure Works Cycles must support the following features:

- Every page on the Web site must display a search option with appropriate search controls and a navigation bar on the left side.
- The customer must be able to search for products by using a part of a product description and a price range.
- The home page must display products that are on sale and special offers, and it must include a picture and description of each product.
- A Groups page must display a hierarchical list of links to groups of bicycle models or bicycle parts in a tree structure.



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Web site requirements

The Internet Web site for Adventure Works Cycles must support the following features:

- A Product Details page must display information about a single product model. It must contain the product name and description, a large picture, and a price range. If the model is available in multiple sizes, multiple colors, or both, appropriate drop-down lists must be provided. When the customer selects a size or color, the other list is repopulated, and the price range narrows to the price of the specific product.
- A Current Order page must display the products a customer has ordered and the quantity of each product, and it must include unit and total prices. A customer must be able to change quantities or remove items from this page. A Continue Shopping button must take the customer back to the last instance of the Products page visited.
- A Customer Sign-in page must allow registered customers to sign in with their e-mail addresses and passwords. New customers must be able to register from this page. (Resellers will not use this page.)



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Web site requirements

The Internet Web site for Adventure Works Cycles must support the following features:

- A Sign-in Information page must allow customers to input or change their e-mail addresses, passwords, and other personal information.
- An Address Maintenance page must allow customers to create, view, update, and delete billing and shipping addresses in their profiles.
- An Addresses Selection page must allow customers to select or remove billing and shipping addresses for an order.
- An Order Summary page must display an order, and it must include sales tax, shipping cost, and the details of reseller discounts. The customer must be able to change the quantities and remove items.



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Web site requirements

The Internet Web site for Adventure Works Cycles must support the following features:

- An Arrange Payment page must allow customers to use credit cards that are on file in the database or to input new credit card information. Resellers must be able to select payment types and input purchase order numbers.
- An Order Confirmation page must display a summary of the submitted order, and it must include an order date, a confirmation number, and order status.
- An Order Status Lookup page must display a list of all orders entered by the signed-in customer. The customer must be able to select one of the orders so that it can be displayed in the Order Confirmation page.
- An Available Jobs page must allow customers to submit their resumes.



Review

- Describe the differences between the waterfall model and the spiral model, and describe how MSF uses both in the MSF Process Model.
- In the MSF Team Model, who is responsible for the design process?
- The tradeoff triangle describes the three types of tradeoffs that a project team and the customer can make. What is a fourth tradeoff that could be considered but that should never be compromised?



Review

- ❑ Describe the purpose of performing daily builds in the MSF Process Model.
- ❑ When you reach the release readiness milestone, what phase have you completed?
- ❑ During which phase of the MSF Process Model is the initial risk assessment document created?
- ❑ When are test cases established in the MSF Process Model?
- ❑ List several types of tests that are performed during the stabilizing phase.



Review

- Why is it important to create a vision statement for the project during the envisioning phase?
- What are some of the key tasks that are performed during the planning phase?
- Describe the quiet period and the activities that occur during this period.