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Service offerings are offerings to customers that are supported by methodology assets and by other assets such as program and project plans and training.

Procedure Guides
Procedure guides are developed for standard, highly repeatable procedures. Procedure guides provide detailed, step-by-step tasks, roles, work products, templates, tailoring guidelines, definitions, and samples and identify the responsible person by role (for example, system architect). Procedure guides can be tailored into procedures for specific business situations, projects, or organizations.

White Papers
White papers are loosely structured documentations of innovations, project experiences, case studies, and research. White papers are used to accelerate the capture and diffusion of knowledge developed in the field, and can provide input to framework products, practice guides, service offerings, and procedure guides.

Collections of Best Practices
Collections of best practices use Catalyst framework concepts to structure loosely defined sets of methods, techniques, or procedures that have general applicability across CSC accounts. These collections represent the first attempt to group what might later become a set of framework activities. Collections are typically developed for emerging business to achieve cost effectiveness and efficiency for CSC and the customer.
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CHAPTER 1 – INTRODUCTION TO CATALYST

Catalyst provides a proven approach for delivering business-to-business products and services for today’s complex and rapidly changing needs. Catalyst’s unique approach converts world-class experience in solving business problems into practical knowledge that can be applied to a broad range of customer needs in the public and private sectors.

What Is Catalyst?

Catalyst is a methodology for providing solutions to business problems and meeting ongoing customer needs. Field-tested processes, techniques, roles, and work products are guided by a set of principles and unique organizing concepts to help perform the planning, analysis, development, operational support, and management necessary to achieve desired outcomes.

Catalyst is a vehicle for leveraging successful experience—it reflects new and evolving business and technology best practice and captures that experience in a variety of documents and templates, referred to as knowledge assets. These knowledge assets are available in electronic printed form for use by the Catalyst practitioner—anyone applying the Catalyst methodology to service contracts and engagements.

The Catalyst methodology is designed to provide:

- **Holistic perspective.** Catalyst looks at a business problem from six perspectives—business process, organization, location, data, applications, and technology. Business needs are determined and addressed using these perspectives throughout the life of a service contract or engagement to help achieve integrated and acceptable solutions.

- **Solution-driven models.** The Catalyst approach to solution development uses integrated sets of work products that evolve in progressively more detail over the life of an engagement. These sets form models of requirements, designs, and development results that can be used to define baselines. Progress can be measured, not solely in terms of the effort expended or the processes and techniques used to generate them, but also by looking at how well the state of the models demonstrates that the evolving solution meets requirements and expectations.

- **Full life-cycle support.** The Catalyst life cycle addresses a business problem or need from vision through solution development and operation. Consistent, effective operational performance is an important goal reflected in the Catalyst approach. Management and architecture coordination are integrated with the life cycle so that the necessary parts of the solution will be constructed and come together when needed and so that the solution will continue to yield the expected outcomes after the program or project completes.

- **Solution alignment and traceability.** Catalyst requires that the developing solution be aligned with a comprehensive architecture baseline, which defines the business vision, user needs, and technology direction. This architecture baseline helps guide the solution from design through completion. Requirements and specifications are represented in the architecture and connected through specific work products, so that the solution can be traced back to its source requirements.

- **Adaptable and tailorable framework.** Catalyst methodology components can be selected and customized for different levels of service contracts or engagements, from multi-enterprise to business area and from large, complex solutions to relatively simple ones. While framework conventions and formats remain consistent, Catalyst contains multiple entry
points, and the content of product- or service-oriented deliverables can be scaled to the required levels. Catalyst is flexible enough to absorb and integrate specific customer methodology needs.

The Box of Boxes illustrates the breadth of areas addressed by Catalyst. A specific service contract or engagement does not necessarily include all life-cycle phases and management areas, but the fact that they are available and already integrated is one of the strengths of Catalyst.

Catalyst Box of Boxes

- **Extensibility and maintainability.** Catalyst keeps pace with emerging technology, business best practice, and changing customer needs through the evolution of its framework. Processes, techniques, roles, and work products are frequently added to reflect new technical approaches or types of business solutions. Existing approaches may also be enriched in content or supplemented by new components.

This framework evolution is facilitated and controlled by a well-defined asset engineering process and the metamodel underlying the Catalyst architecture. Because of the metamodel, new approaches and relationships among methodology elements can quickly and easily be incorporated in Catalyst without compromising its overall integrity. Thus Catalyst can remain internally consistent and robust while responding flexibly and dynamically to new methodology needs.

**Why Use Catalyst?**

Catalyst is robust enough to address a wide variety of business needs—in size, focus, and complexity—yet flexible enough to adapt to particular situations. It offers the following advantages:

- **Speed to business results with quality and consistency.** Catalyst’s non-prescriptive format avoids activities that unnecessarily lengthen the process for delivering solutions where time to market is important. Knowledge reuse and methods such as accelerated development, workshops, and prototyping promote both quality and faster progress.

- **Designing for operability.** Catalyst provides a long-term perspective for the solution and its continuity in business operation. Each phase in the life cycle refines and advances the solution design with a focus on ultimate use and operation.
- **Unified approach to enabling enterprise transformation.** Catalyst provides a cohesive set of concepts and vocabulary that clarify communication, thereby enabling more effective performance of teams across all levels of the business (such as leadership, development, and sponsorship) and throughout the service contract or engagement life cycle.

- **Adapting to technology change.** Catalyst constantly evolves to exploit emerging technologies, such as Web- and knowledge-based solutions. The Catalyst framework can incorporate new processes, work products, roles, and techniques to meet new demands.

- **Process efficiency and effectiveness.** Throughout solution development and operation, Catalyst constantly encourages process improvement and consistency (for repeatability) through the use of process design, workshops, prototyping, organizational learning, and other techniques.

- **Support for industry standards compliance.** Compliance to industry standards is integral to the Catalyst framework, so that Catalyst can be used in support of an integrated compliance strategy. Catalyst maps to key areas of ISO 9001, the Software Engineering Institute Capability Maturity Model Integration (CMMI), and the Project Management Body of Knowledge (PMBOK).

- **Knowledge environment of reusable best practice.** Catalyst is the foundation of a comprehensive library of common processes reflecting best practice backed by proven experience. This environment makes rapid evolution of reusable knowledge assets possible by making them available to other Catalyst practitioners.
CHAPTER 2 – CATALYST GUIDING PRINCIPLES

Catalyst is based on strongly held beliefs about how business-to-business services including management consulting, information technology (IT) consulting, systems integration, information systems (IS) outsourcing, and business processing outsourcing should be pursued. The Catalyst guiding principles serve as the foundation for applying Catalyst and are inherent in the design of the methodology. Consistent focus on these principles during a service contract or engagement contributes to building sound, continuing customer relationships and supports the discipline needed to achieve business results.

Deliver Results That Satisfy Customer Priorities

Customer needs and expectations often evolve with the design and development of the solution. Without customer involvement throughout the life cycle or an effective way of defining, managing, and tracing evolving requirements, the resulting solution may not meet user expectations on delivery or perform as intended.

Catalyst recognizes that customer environments and user requirements are constantly changing. Catalyst provides techniques for continuous, active user involvement in analysis, design, and development so that the evolving solution will align with the user’s increasing understanding. For situations where detailed requirements documentation is critical, Catalyst provides effective techniques for defining, tracking, managing, and updating requirements.

Align Solutions with the Business Vision

Successful change begins when business leaders develop a picture of where they want the enterprise to be in the future and communicate that vision to the organization. Realizing the
vision requires clear and effective mechanisms for capturing the business vision and aligning solutions to that vision.

In Catalyst, architectural, design, and operational decisions are made in the context of the desired future state. Analysis of the present state is performed only when needed to clarify the vision and for effective transition planning.

**Reuse Knowledge to Solve a Specific Business Need**

Solutions typically include elements that are repetitive or similar to those developed as part of previous solutions. The ability to quickly obtain and repeatedly adapt knowledge for reuse can yield significant gains in development or service productivity, time to market, and operational excellence.

Catalyst provides a robust set of reusable knowledge components that can be adapted to the unique aspects of each business problem or need. These components consist of processes, techniques, roles, and work products that can be combined, scaled, and tailored for a wide variety of solutions. Catalyst is also designed to facilitate the integration of new best practices in emerging areas and technologies, which can be readily applied in the form of reusable knowledge components.

**Guide Solutions with an Architecture**

Achieving significant and timely business results usually requires that organizations commit to business and technical direction long before all facts and requirements are known. The benefits of standardization, integration, flexibility, maintainability, and cost-effectiveness gained from a unifying architecture outweigh the risks of having to modify that architecture later in the face of new information.

In Catalyst, decisions that affect the solution are made within the context of an architecture that defines the solution baseline. This architecture reflects the business vision, contains a comprehensive definition of requirements across domains of change, and aligns development of the solution through the use of model views. Important information and business decisions are reflected by updates to the architecture.

**Foster Partnerships and Joint Ownership of Results**

User and development teams should share responsibility for verifying that requirements are being adequately addressed during development of the solution. Frequent communication and interaction throughout development is important for making sure that the delivered solution provides the intended business value.

Catalyst encourages cooperative partnership among all stakeholders through its use of interactive methods. It facilitates active user participation throughout all processes, including critical points in the lifecycle, in order to clarify expectations and build and maintain consensus. Catalyst strongly encourages participative relationships with goals, risks, and benefits shared among all parties.
Achieve Operational Excellence and Quality Results Through Process Improvement and Innovation

Achieving significant results in quality or consistent operational performance requires that technology be applied and managed appropriately and in support of efficient processes. Gains are limited if a quick-fix approach is taken or if leading-edge technology is applied for its own sake, such as automating a small set of processes without determining that automation is needed and verifying that it is effective. The costs of operating and maintaining the technology may even exceed the original benefits of implementing it.

Catalyst encourages the application of technology and business best practice to improve and maintain efficient, consistent processes. In contrast to focusing on individual tasks, Catalyst focuses on cross-functional business flow and the potential of technology that can bring about measurably improved business results. Interactive methods and approaches provide a means for users to assess the potential business impacts of the technology and more clearly define and assure quality in the end results.

Orchestrates All Aspects of Change

New information systems alone do not transform a business. Many solutions—no matter how functionally effective, economically efficient, or technically elegant—will not fully realize their potential business value until they are integrated into the business along with the supporting behavioral change.

Catalyst provides effective tools to address the drivers of change—leadership, culture, commitment, capabilities, structure, communication, and performance. Catalyst also describes when to involve leaders from the business to validate their needs and expectations and to position the solution for success by ensuring their participation.

Deliver Early Business Benefits Through Frequent Successes

Creation of business value is brought about by the delivery of solutions, including the effective use of services. For large, complex service contracts and engagements, value should be demonstrated by early and consistent delivery of results. Deferring the realization of value until the final delivery of the solution imposes risk that customer expectations may not match the outcome and that the result may not be workable. In addition, opportunities are lost to add momentum to the development of the final product through customer feedback and reinforcement.

Catalyst divides big, high-risk service contracts and engagements into smaller, more manageable pieces in order to more frequently and consistently deliver measurable, added value. Each delivery provides an opportunity to validate the work-in-progress against expectations. Repeated deliveries promote process consistency and provide opportunities to improve processes. In this way they create the potential for solutions to become self-funding as the business benefits of each success more than offset ongoing development costs.
CHAPTER 3 – THE CATALYST FRAMEWORK

Introduction to the Catalyst Framework

The Catalyst methodology framework consists of framework elements. These are categorized as framing concepts, components, and topics and techniques, as shown in the figure Catalyst Framework Elements.

Framework Concepts

Catalyst Framing Concepts

Catalyst Framing Concepts guide the selection and adaptation of Catalyst framework components to address service contracts and engagements. The framing concepts consist of the domains of

Catalyst Framing Concepts

...
change, model views, units of scope, the Box of Boxes, paths, stages, processes, and activity blocks. The Case Study in the Applying Catalyst chapter presents examples of applying the framing concepts.

Catalyst Framework Components

Catalyst framework components—activities, roles, and work products—are building blocks. When applying Catalyst, the Catalyst practitioner selects preassembled sets of framework components and techniques, guided by the Catalyst framing concepts, and tailors them for the specific service contract or engagement.

The framework components and techniques are interrelated for efficient selection, tailoring, and execution. For example, the selection of a specific work product influences the selection of activities. This selection, in turn, influences the selection of roles and techniques. In the figure, Activities, Work Products, Roles, and Techniques, the arrows depict these interactions.

Domains of Change in Catalyst

Catalyst looks at a business problem and the impact of change from six perspectives, known as the domains of change. These domains are shown in the figure Catalyst Domains of Change. The business problem or need should be clearly defined in terms of the degree of impact in each domain. Together, the domains help define the problem scope, measure the impact resulting from the proposed change or service level agreement, estimate the work needed, and integrate the work effort.
The domains of change are:

- **Business process.** The business process domain focuses on what the customer does, how activities are carried out and in what sequence, what rules are followed, and the type of results obtained. Change in the business process domain is often a key driver for change in all the other domains.

- **Organization.** The organization domain focuses on the people and organizations involved in the change: their culture, capabilities, roles, team structures, and organizational units.

- **Location.** The location domain focuses on where the customer conducts business. This applies to physical facilities where people and technology reside, such as a branch office or data center, and to location types, including logical addresses such as user IDs. Locations may include customer and vendor sites as well as internal client sites.

- **Data.** The data domain focuses on the content, structure, relationships, and business rules for the data used by the business processes, applications, and organization. It also considers the transformations needed to result in information and knowledge that the customer can use.

- **Application.** The application domain focuses on the capabilities, structure, and user interface of software applications and application components used to support the change. Applications or components may be specific to the customer’s industry or operation, such as Enterprise Resource Planning, or they may be general in nature, such as a word processing program or an electronic spreadsheet.

- **Technology.** The technology domain focuses on the hardware, system software, and communications infrastructure used to enable and support solutions and services. Change in the technology domain is often a key driver for change in other domains.

Each domain is associated with work products, roles, and techniques that help enable and support the change for that domain. For an illustration of this association see the figure Framework Components Within a Domain.
Model Views in Catalyst

Model views link areas of change impact to the development of the solution or service. There is a model view for each domain of change—business process, organization, location, application, data, and technology. Other model views, such as the Business Model View and the System Engineering Model View, reflect an overall perspective; that is, they help provide integration and coordination across all model views. The figure Catalyst Model Views and the Domains of Change depicts the model views for the domains of change framed by model views that provide integration and coordination.
Catalyst Model Views and the Domains of Change

Model views are the vehicle for transforming the needs for each domain of change into results. Each model view contains a set of models consisting of work products. Each model represents a layer of the solution. For more information about models and work products refer to the Work Products in Catalyst section in this chapter.

Units of Scope in Catalyst

*Units of scope* help to scale and structure the service contract or engagement so that the following questions can be answered:

- What are the boundaries of the **business** organization being addressed?
- How will the **work** be structured to deliver the solution?
- How will the **solution** be structured and deployed to the organization?

These questions define the three dimensions of scope—business, work, and solution.
Catalyst Units of Scope

Units of scope express levels of magnitude. The figure Catalyst Units of Scope shows the units for each dimension of scope:

- **Business** scope scales from a multi-enterprise organization to an enterprise and a business area within an enterprise.

- **Work** scope scales from a program to a project and a work package within a project. A project can deliver a product, a service, or a combination of the two. Examples of services are strategic consulting services, setting up and managing programs, and providing continuous operations.

- **Solution** scope is different for products and services.
  - **Product** solution scope scales from a system to a subsystem and a system component within a subsystem.
  - **Service** solution scope scales from an overall contract for services to a type of service specified in a contract and a localized service for a specific site and situation.

Determining units of scope plays an important part in service contract or engagement planning. It must be done for all three collectively to help ensure that all parts of the service contract or engagement work together at the appropriate level to deliver the intended outcome, which is typically one or more releases or service level agreements. For more information about release planning refer to Catalyst Program Management, Catalyst Project Management, and Catalyst Maintenance Processes.
Business Scope in Catalyst

**Business scope** describes the scale of the business organization being addressed. Business scope levels are defined as follows:

- **A multi-enterprise** organization consists of multiple enterprises operating together in a value-added alliance. For example, an aerospace initiative involves government agencies and major contractors, and an international civil engineering project such as the Channel Tunnel involves government agencies in multiple countries.
- **An enterprise** is a major organization with its own mission, goals, and performance objectives. An enterprise may be an independent company, a major division of a large company, a corporation, or a government agency. The typical enterprise includes a number of business areas.
- **A business area** is any logical subset of the enterprise singled out for solution or service delivery. A business area can be defined as a function of the enterprise; however, cross-functional business areas generally provide the opportunity for more effective solutions. Examples of cross-functional business areas include product development, order fulfillment, customer service, and finance administration and reporting. A business area contains one or more physical locations or sites.

Work Scope in Catalyst

**Work scope** describes the structure and scale of the work to be performed. Work scope levels are defined as follows:

- **A program** is the set of activities and decisions concerning the delivery of any collection of projects, services, and other activities managed together for a specified purpose. A program consists of one or more projects.
- **A project** is a temporary endeavor that consists of a managed set of activities undertaken to create a product, deliver a service, or achieve a business result and to meet specific objectives and completion criteria within specific time, cost, resource, and quality constraints. A project can be composed of multiple work packages.
- **A work package** is a major unit of work performed on a project. It has a well-defined scope, a schedule, and a time-phased staffing profile.

Solution Scope in Catalyst

**Solution scope** describes the scale of the elements that will be used to design, build, integrate, and deploy a solution.

**Product** solutions have these solution scope levels:

- **A system** is the integrated solution that supports a set of defined objectives for a customer.
- **A subsystem** is a collection of related solution components grouped to accomplish one or more parts of the system’s objective.
- **A system component** is an element of the solution that can be independently developed to address a specific aspect of the solution and integrated with other system components to form a subsystem.

**Service** solutions have these solution scope levels:

- The entire body of **services** is specified in the service contract.
• A **type of service** supports a set of defined objectives for a customer, such as network services, desktop and distributed systems, mainframe and midrange operations, or employee payroll.

• A **localized service** supports a specific function at one or more specific sites, but is not applicable to other sites within the service contract. For example, one division of a company may require a separate compensation and reward program that will continue to run on a legacy system.

### Using Units of Scope

#### Multiple Levels for Each Dimension of Scope

A service contract or engagement can be structured to address multiple levels for each dimension of scope. These levels can relate differently at different points of the service contract or engagement. For example, a project may focus on analyzing a single business area for a system that will ultimately be deployed to multiple business areas or sites. The solution may be decomposed into subsystems and system components for design, development, and testing. These efforts may, in turn, require work packages that address smaller pieces of the solution.

#### Interactions Among Dimensions of Scope

The dimensions of scope work in combination to support various processes. The following examples show how units of scope may be used for some typical processes.

**PROBLEM DEFINITION**

Together, *business* scope and *work* scope can help determine the scale and type of work needed to address each level of the business. As solution design begins, the levels of the organization that require a vision are mapped to the appropriate levels of work. For example, a project may be needed to define an enterprise vision, or multiple projects may be needed to define an architecture for each business area.

**SOLUTION DEVELOPMENT**

Together, *work* scope and *solution* scope can help determine the scale of work required to evolve from design through development to operation or to provide outsourcing services. They also support the effort of planning and organizing work into releases or segments of service to be provided. For example, a project may have a release that includes development work packages that are targeted for a larger, logical unit of business scope, such as a business area, but that are deployed at physical locations or sites. If the work to be done crosses many organizational boundaries, a program might be considered. If the work will be limited to one area of the business, a project may be more appropriate.

**SOLUTION DEPLOYMENT**

Together, *solution* scope and *business* scope can help determine what levels of the organization will need to be targeted at different stages of the life cycle. This is especially important for deployment. For example, a solution defined for a particular business area may be developed in separate work packages or service requests that are defined in terms of logical boundaries. However, integration and deployment will occur at physical sites and at locations on those sites within the business area.
The Catalyst Box of Boxes

The **Box of Boxes** is the highest-level framing concept for the work of a Catalyst service contract or engagement. As shown in the figure Catalyst Box of Boxes, it contains a **life-cycle** portion and a **management** portion. The life-cycle portion of the Box of Boxes represents the work to be done; the management portion represents coordination and integration of that work.

The life cycle is represented by **phases**, which categorize and sequence the work to be done. Management is represented by **management areas**, which categorize specific types of coordination. The complete set of phases and management areas is a generic template for delivering solutions. It is rare for an engagement to use all of the phases and management areas in the template, but they are all available when needed.

### Phases and Management Areas

**Phases** represent the inherent life cycle for delivering solutions. The phases selected for a service contract or engagement are life-cycle segments that collectively describe and order the work to be done.

A **management area** is a set of processes used to describe and order the control and coordination aspects of a service contract or engagement. With phases, management areas provide a basis for planning, estimating, and facilitating the coordination and integration of work across the service contract or engagement.

Each service contract or engagement starts with a “footprint” in the Box of Boxes: the set of phases and management areas that will be applied. The initial determination of domains of change impacts and units of scope helps guide the selection of phases and management areas forming this footprint. Within the selected phases and management areas, the Catalyst practitioner selects from alternative and optional processes and adapts the resulting set of processes to suit the service contract or engagement. The footprint may be adjusted as the service contract or engagement proceeds.
While domains of change focus on the breadth of the business need or problem, phases focus on the structure and depth of the effort. Each phase contains groups of processes applicable to that point in the life cycle. Using phases to identify and position an engagement within the life cycle helps the Catalyst practitioner anticipate what needs to come before and what should follow. Phases should be viewed as helpful conventions, not as firm rules for defining the boundaries of the service contract or engagement.

Life-Cycle Phases in Catalyst

Vision and Strategy

The Vision and Strategy phase is the starting point for enabling wide-reaching change. It addresses change from a broad perspective that narrows to focus on critical areas of the business. During this phase areas of change are identified, including key business processes and a vision for the products or services the customer organization wants to deliver.

The Vision and Strategy phase uses existing business objectives, best practice, and customer input to establish performance goals, a vision, and a set of principles in each domain of change. These goals drive planning and alignment for specific areas of the business. The Vision and Strategy phase results in an organization positioned for change and defines one or more engagements to be pursued.

For more information refer to Catalyst Vision and Strategy.

Architecture

The Architecture phase decomposes specific areas of the customer organization targeted for change. The phase defines the overall business solution, in terms of integrated high-level components, in sufficient detail for development work to begin. In addition, the architecture is developed with the eventual operational service in mind, to ensure that the operational performance goals and expectations are met and to meet agreed-upon full life-cycle cost targets.

For each targeted area, the Architecture phase reviews and updates the goals, vision, and performance targets in light of the overall vision and strategy. It then defines requirements of the business to affect all domains of change. A high-level design is created—using tools and techniques such as process modeling, conceptual data modeling, application architecture, and technical infrastructure design—along with updated organizational roles and location types. Approaches are selected based on the type of change required, using small conceptual prototypes where necessary.

Other key results of the Architecture phase include the identification of potential application software packages, a defined business case, and a plan that divides the overall solution into manageable releases.

For more information refer to Catalyst Business Area Architecture, Catalyst System Architecture, and Catalyst Enterprise Architecture.

Development

The Development phase decomposes the architecture definition into detailed specifications and builds the solution by creating or acquiring release components. The Development phase approach is determined by the path or paths selected. Customer requirements and the technical
nature of the solution determine the path. For more information refer to the Paths in Catalyst section in this chapter.

Integration

The Integration phase addresses components of a release. During this phase the integration team brings together individual work packages of solution components developed or acquired separately during the Development phase. Application and technical infrastructure components are tested to verify that they interact properly.

If appropriate, the team conducts a pilot to ensure that all elements of the business solution work together, including business processes, organization support systems, information technology, and facilities representative of the target business operation. Other processes in the Integration phase include conducting a pilot of systems management processes, such as Help Desk response, and testing system performance through a realistic simulation of peak volumes.

For more information refer to Catalyst Integration and Deployment.

Deployment

During the Deployment phase, the team puts the solution release into operation at target sites. The release may consist of new business processes, applications, and supporting infrastructure and organizational changes. Deployment phase processes are repeated for each deployment site.

Deployment processes include ordering, installing, integrating, and testing application and technical infrastructure components for the deployment site. Examples include completing appropriate organization change interventions, training deployment site personnel, conducting a communications campaign, and beginning business operations under the new concept.

For more information refer to Catalyst Integration and Deployment.

Operational Services

The Operational Services phase addresses all the day-to-day operations and support processes necessary to deliver continuous service:

- **Continuous Service Delivery**—Scheduled operation, monitoring, and maintenance activities
- **Service Request Delivery**—Non-scheduled activities in response to problem reports, change requests, and requests for additional service
- **Support processes**—Asset Management, Technology Administration, Security Administration, and Facilities Administration activities required to keep the system up and running at the contractually specified level.

For more information refer to Catalyst Continuous Services.
### Catalyst Phase Summary

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<td>• Define and prioritize business areas</td>
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<td>Architecture</td>
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<td>• Build, transform, or acquire applications and infrastructure to support processes</td>
</tr>
<tr>
<td>Integration</td>
<td>• Validate entire business solution, optionally using authentic pilot</td>
</tr>
<tr>
<td>Deployment</td>
<td>• Deploy all aspects of business solution to target locations</td>
</tr>
<tr>
<td>Operational Services</td>
<td>• Continuously operate and improve computing environment</td>
</tr>
</tbody>
</table>

### Management Areas in Catalyst

#### Enterprise and Portfolio Management

Enterprise and Portfolio Management comprises the processes for Enterprise Management (setting the business direction, monitoring achievement against goals, and making adjustments as necessary), Account Management (effective management of an outsourcing relationship), and Portfolio Management (assessing and directing a portfolio of assets or offerings in order to balance benefits, costs, and risks in a strategic context).

#### Program Management

Program Management is the set of actions and decisions that direct and coordinate initiatives within a program. Program Management includes activities such as selecting projects to pursue and support, monitoring and responding to changes in the business environment, and resolving interproject issues. Managing programs involves directing, assuring, and coordinating activities and decisions that enable an enterprise to achieve needed business results by business-critical dates.

For more information refer to Catalyst Program Management.

#### Project Management

Project Management is a disciplined process for identifying, coordinating, and continuously focusing people and other resources to achieve project and contractual objectives within time, cost, resource, and quality constraints. The Project Manager is the person whom management identifies as responsible and accountable for achieving project and contractual objectives within the specified constraints. The project manager plans, directs, controls, and reports on the project.

For more information refer to Catalyst Project Management.
Service Management

Service Management processes guide and govern the Operational Services phase of the life cycle. Service Management has two main components:

- Service Request Management receives and then manages fulfillment of requests. Service Request Management includes logging, performing initial analysis, monitoring, prioritizing, measuring, and closing. As the single point of entry and as the central point, the Help Desk interfaces with all other functional areas and with the escalation/notification processes.

- Service Delivery Management coordinates and manages services to ensure that the customer receives a seamless delivery of service. Service Delivery Management includes processes such as Service Level Agreement Management, Client Management, Site Management, and Service Delivery Assurance.

For more information refer to the Continuous Services Overview.

Architecture and Engineering Management

Architecture and Engineering Management processes focus on the architecture of solutions. They include processes associated with formulating and coordinating solutions, continued maintenance of defined architectures and actual business and technical environments, and managing and coordinating change in development and operational environments.

For more information refer to Catalyst Architecture and Engineering Management.

Management Support Processes

Management Support Processes consists of the management processes and supporting techniques needed to support the other Catalyst management processes. It includes the organizational and process infrastructure needed to make and implement effective management decisions. Many of the techniques are common to managing projects, programs, and operations and would be expected to be in place as part of the management environment. Catalyst suggests techniques to use and provides advice on the processes required to accomplish initiatives effectively.

For more information refer to Catalyst Management Support Processes.

Process Enablement Paths in Catalyst

A process enablement path is a set of processes with a specialized focus, reflecting a technical approach or type of business solution, in support of customer requirements. Process enablement paths can span multiple phases. The figure Examples of How Process Enablement Paths Fit Into the Life Cycle illustrates how some typical paths map to phases.

Process enablement path selection is a significant factor in planning project structure. When planning a service contract or engagement that involves solution development, the Catalyst practitioner selects the path or paths most suited to project objectives. Examples of process enablement paths are:

- **Accelerated Application Development (XAD)**, useful for highly critical, rapid application development when component- or Web-based development is not appropriate.

- **Catalyst Enterprise Resource Planning (C-ERP)**, appropriate for engagements that need to implement ERP packages, such as SAP, Oracle, and PeopleSoft. It provides a reusable
A process framework that unites CSC ERP best practices and ERP methodologies in a common overall approach.

- **Catalyst Rational Unified Process (C-RUP)**, appropriate for engagements requiring RUP. It provides a framework that integrates RUP into Catalyst's business change and management processes.
- **Catalyst Data Warehousing (CDW)**, appropriate for Business Intelligence and Data Warehousing solutions.
- **Iterative Custom Development (ICD)**, appropriate for developing a custom solution using iterative techniques.
- **Incremental Application Development (IAD)**, appropriate for developing a solution involving business process design, application development, or data definition and design, in a scenario involving large, complex, or non-interactive applications with requirements defined early in the life cycle.
- **Legacy Systems Transformation (LST)**, appropriate for the improvement of the business value of an existing system or systems through changes to or replacement of the system components or infrastructure. The transformation affects one or more of the technical domains (application, data, and technology).
- **Package-Based Development (PBD)**, appropriate for evaluating, selecting, and implementing a package-based solution.
- **Release-Based Maintenance (RBM)**, appropriate for discrete projects addressing the routine maintenance and evolution of existing systems.

**Examples of How Process Enablement Paths Fit Into the Life Cycle**

The bars superimposed on the Box of Boxes represent the activities specific to each path. The figure illustrates where they are executed relative to the activities for phases.
Processes in Catalyst

A **process** is an ordered, interdependent set of activities that accomplishes a specific purpose. Processes can be executed independently or combined with other processes to form larger processes. Processes can be tailored by adding, deleting, changing, reordering, and scaling activities. For more information about activities refer to the Activities in Catalyst section in this chapter.

**Subphases** and **specialty areas** are Catalyst framework processes. They are selected after phases, management areas, and paths are identified. Like other processes, subphases and specialty areas can be tailored specifically for the service contract or engagement.

A **subphase** is a process that addresses a specific purpose within a life-cycle phase, management area, or specialty area. For example, Information Technology Strategy (ITS) is a subphase of the Vision and Strategy phase. The objective of ITS is to position the use of information and information technology to support the future direction of the business. For more information refer to Catalyst Information Technology Strategy.

A **specialty area** is a process or group of processes that provides or adds specialized focus for a domain of change and supports a specific set of role competencies. A specialty area may cross several phases. For example, Organizational Change (OC) is a disciplined process for defining the future organizational characteristics required to enable intended business results and for supporting stakeholders in their transition to, and realization of, the desired organizational future state. For more information refer to Catalyst Organizational Change.

**Process Flow Diagrams** are graphical representations of processes. For an example see the figure Process Flow Diagram for Business Area Architecture.
Process Flow Diagram for Business Area Architecture
Activities in Catalyst

An activity is a unit of work involving one or more roles to produce a tangible or intangible result. Activities may contain lower-level activities or tasks.

Work Products in Catalyst

A work product is a tangible result (output) of an activity or task. Work products can be components embodying the solution at successive stages from design to operation, or they can be used to help manage, support, and facilitate solution definition, evolution, and operation.

<table>
<thead>
<tr>
<th>Work Products and Deliverables</th>
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</thead>
<tbody>
<tr>
<td>Work products are not always deliverables. A deliverable is a work product or service given to the client for review and acceptance. It frequently has contractual implications.</td>
</tr>
</tbody>
</table>

Catalyst work products are grouped into the following categories:

- **Model Views.** A model view is a collection of models pertaining to a particular domain. Catalyst provides a model view for each of the six domains of change (business process, organization, location, application, data, and technology). Additional model views are provided, such as the business model view and the system engineering model view. For more information refer to Model Views in Catalyst in the Catalyst Framing Concepts section of this chapter.

- **Plans.** These work products define, manage, and organize service contracts or engagements or specified parts of service contracts or engagements.

- **Reports.** These work products represent point-in-time summaries of the contents of one or more model views.

- **Management Work Products.** These work products are used for planning, guiding the service contract or engagement, communicating with the team, and analyzing and reporting overall status.

- **Development Results.** These work products include the solutions deployed at various sites in an integrated release as well as certain intermediate stages of those solutions, such as prototypes.

The table Catalyst Work Product Categories lists examples of the subcategories in each major category of work products.
## Catalyst Work Product Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Subcategories</th>
</tr>
</thead>
</table>
| **Model Views**           | • Business Model View  
                           • System Engineering Model View  
                           • Business Process Model View  
                           • Organization Model View  
                           • Location Model View  
                           • Application Model View  
                           • Data Model View  
                           • Technology Model View |
| **Plans**                 | • Transformation Plans  
                           • Program Management Plan  
                           • Project Management Plan  
                           • Test Plans and Materials  
                           • Other Plans |
| **Reports**               | • Life-Cycle Reports  
                           • Other Reports |
| **Management Work Products** | • Configuration Management Work Products  
                           • Staff Management Work Products  
                           • Quality Management Work Products  
                           • Risk Management Work Products  
                           • Issue Management Work Products  
                           • Monitoring and Tracking Work Products  
                           • Project Results Work Products  
                           • Project Management File  
                           • Program Management Work Products  
                           • Procurement Work Products |
| **Development Results**   | • Prototypes  
                           • Development Products  
                           • Integrated Products |

For detailed information about work products refer to Catalyst Work Products.

### Work Product Models

In Catalyst, the solution design resides in and evolves through an interrelated set of models. Models provide meaningful categories for understanding the components required to develop the solution and ensuring that the solution is properly integrated across all affected domains of change.

Models ensure that the solution will be:

- **Organized, grouped, and leveled** based on logical relationships.
- **Comprehensive**, containing the selected set of work products at each stage of development and for each model view.
- **Integrated**, demonstrating continuity and integration of the solution design across all model views as work products evolve from abstract to concrete.
Each Catalyst model is a collection of related work products, and each model view is a collection of related models. The figure Model Views, Models, and Work Products illustrates these relationships.

As the solution design evolves, work products are created, updated, and integrated. Within each domain and across domains, models capture and reflect the solution design at predefined points of the life cycle. When the model detail is complete, the set of models describes the new state of the solution. The Model Views and Models table lists examples of the models contained in each model view.

Two types of models play an especially significant role in developing solutions:

- **Solution design models** embody the solution at successive stages of completion.
- **Supporting models** enable and facilitate solution development.
Solution Design Models

Solution design models embody the solution in a series of work products that progress from abstract to concrete. Each work product develops the solution at a lower level of abstraction by building on previous work products that are at higher levels of abstraction. When the design is complete and implemented, the solution becomes operational. The following types of solution design models apply to all model views:

- **Direction model.** This model includes the vision, requirements, principles, constraints, assumptions, standards, and transition implications related to the specific model view. It establishes the goals and ground rules to be used. The direction model is the highest level and represents the desired direction and goals of the customer along with the priorities to be pursued to achieve the goals.

- **Conceptual model.** The conceptual model provides a first-cut or high-level design in the specific model view. This model establishes targets, structures requirements to achieve the goals, and partitions the required results into portions that can be estimated and used in the approach needed to develop the solution. A conceptual model can also be extracted from the logical model of an existing system as a starting point for future development.

- **Logical model.** The logical model expands the conceptual model to a level of detail needed to specify the solution in each model view. A logical model can also be extracted from the physical model of an existing system as a starting point for future development.

- **Physical model.** The physical model uses the logical design to develop the detail necessary to implement the solution in each model view. It is a highly detailed definition of the solution needed to carry out the activities in the defined area of scope. A physical model can also be extracted from the physical implementation of an existing system as a starting point for future development.

The figure Solution Evolution: Levels of Abstraction Across Model Views depicts these solution design models based on the levels of abstraction for each model view.
Solution Evolution: Levels of Abstraction Across Model Views

Other work products pertain to the solution design and are unique to a model view, but are not classified as levels of abstraction and do not relate directly to other work products. The Performance Engineering Model in the Technology Model View is an example. For more information about solution design model types refer to Catalyst Work Products.

Supporting Models

Supporting models are used to measure, diagnose, transition, operate, and maintain the solution or to support coordination and integration of the solution. Examples of supporting models are:

- **Diagnostic model.** The diagnostic model establishes the need for change. This model identifies, summarizes, and evaluates existing and/or anticipated components and assets.
- **Operational model.** This model includes operating procedures, management activities, and maintenance procedures to ensure that the defined area of the enterprise performs to requirements.
- **Transformation model.** This model supports the evolution of models from current to future state for each domain of change. As changes are made to the operational baseline, the models need to be transformed. From the service management perspective, once future state models are developed and implemented, they become the current state models. An example of a transformation model in the organization domain is the transition model.
Roles in Catalyst

A role is the complete set of competencies—knowledge, skills, and behaviors—needed to perform a specific type of work. Roles are directly associated with activities or tasks. A person can perform many roles on a service contract or engagement, and a role can be assigned to or divided among multiple people.

Catalyst roles provide the flexibility and specialization needed for innovative, comprehensive, and technology-specific solution development approaches. Catalyst roles are grouped into the following categories:

- **Business change roles** focus on the change program rather than on the ongoing business operation. These roles generally disappear once the change has been implemented.
- **Ongoing business operation roles** focus on running the current business rather than on creating and managing change. These roles generally exist before any change is contemplated and persist after the change has been implemented.

The table Role Examples lists a few selections from each role category. For a complete list of roles refer to Catalyst Roles.

<table>
<thead>
<tr>
<th>Role Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
</tr>
</tbody>
</table>
| Business Change Roles | Process Enablement Roles | • Process designer  
• Application designer-builder |
| | Organizational Change Roles | • Organizational change architect  
• Education coordinator |
| | Technical Infrastructure Roles | • Information technology strategist  
• Chief system engineer |
| | Facilities Infrastructure Roles | • Facilities designer  
• Facilities infrastructure expert |
| | Coordination and Integration Roles | • Change control board  
• Business architect |
| | Governance Roles | • Program leadership team  
• Project manager |
| Ongoing Business Operation Roles | Business Management and Operation Roles | • Operations manager  
• System users |
| | Systems Management and Support Roles | • Information technology managers and staff  
• Help Desk |
Techniques in Catalyst

A technique is a procedure used to accomplish one or more activities or tasks. While a topic describes what something is, a technique describes how something is done. Some techniques are unique to Catalyst, while others are industry-accepted best practice, such as a scorecard approach to measurement.

Catalyst provides a variety of techniques that can be used to expand, augment, or substitute for the basic techniques found within the activity descriptions in each process. Typical specialized techniques are:

- Business Process Modeling
- Entity Modeling
- Prototyping
- Requirements Specification
- Workshop Facilitation.

For example, the Solution Demonstration Lab (SDL) is a technique appropriate to all development paths and critical to accelerated application development (XAD). SDL prescribes a lab environment where a small team has the charter and resources to experiment with, test, and refine new business system solutions. It is used to:

- Design and evaluate new business system processes, concepts, and organizational behaviors
- Demonstrate and evaluate the capabilities of a commercial off-the-shelf (COTS) package to support the specific needs of the new, redesigned, or reengineered business system
- Identify gaps between COTS package capabilities and business requirements and define gap resolution options.

Some subjects are both a topic and a technique. For example, the Prototyping topic describes what prototyping is, and the Prototyping technique describes how prototyping can be applied.