Fold each printed sheet in half lengthwise. The left side of the document will list the term and the right side will list the definition. Tape or staple the open edges of your flashcards. Cut out your flashcards on the solid lines indicated and fold them on the dotted lines.

Module 4
Section A: Functional and Operational Strategies

Term
Disintermediation

APICS CPIM Learning System © 2026

The process of eliminating an intermediate stage or echelon in a supply chain with the goal of reducing total supply chain operating expenses, total supply chain inventory, and/or total cycle time to increase the profitability of the remaining echelons. See: echelon.

Module 4
Section A: Functional and Operational Strategies

Term
Functional strategy

APICS CPIM Learning System © 2026

A strategy that is built from the business strategy for various business functions, such as finance, marketing, and production. See: strategic planning.

Module 4
Section A: Functional and Operational Strategies

Term
Logistics

APICS CPIM Learning System © 2026

The subset of supply chain management that controls the planning, coordinating and movement of resources, such as people, materials, inventory, and equipment, from one location to another. It includes the forward and reverse movement, handling, and storage of resources between two points.

Module 4
Section A: Functional and Operational Strategies

Term
Operations strategy

APICS CPIM Learning System © 2026

The total pattern of decisions that shape the long-term capabilities of an operation and their contribution to overall strategy. Operations strategy should be consistent with overall strategy. See: strategic plan.

Module 4
Section B: Environments, Types, and Layouts

Term
Assemble-to-order (ATO)

APICS CPIM Learning System © 2026

A production environment where a good or service can be assembled after receipt of a customer's order. The key components used in the assembly or finishing process are planned and usually stocked in anticipation of a customer order. Receipt of an order initiates assembly of the customized product from common components into a pre-determined product. This strategy is useful when a large number of end products (based on the selection of options and accessories) can be assembled from common components. ATO is distinct from configure-to-order in that the assembly is standard and is not customized to order. Syn.: finish-to-order (FTO). See: make-to-order (MTO), make-to-stock (MTS), configure-to-order (CTO).

Module 4
Section B: Environments, Types, and Layouts

Term
Assembly line

APICS CPIM Learning System © 2026

An assembly process in which equipment and work centers are laid out to follow the sequence in which raw materials and parts are assembled. See: line, line manufacturing, linear layout, production line.

Module 4
Section B: Environments, Types, and Layouts

Term
Batch manufacturing

APICS CPIM Learning System © 2026

A type of manufacturing process in which sets of items are moved through the different manufacturing steps in a group or batch.

Module 4
Section B: Environments, Types, and Layouts

Term
Cell

APICS CPIM Learning System © 2026

A manufacturing or service unit consisting of a number of workstations and the materials transport mechanisms and storage buffers that interconnect them.

Module 4
Section B: Environments, Types, and Layouts

Term
Cellular layout

APICS CPIM Learning System © 2026

An equipment configuration to support cellular manufacturing. See: work cell.

Module 4
Section B: Environments, Types, and Layouts

Term
Cellular manufacturing

APICS CPIM Learning System © 2026

A manufacturing process that produces families of parts within a single line or cell of machines controlled by operators who work only within the line or cell. See: work cell.

Module 4
Section B: Environments, Types, and Layouts

Term
Continuous production

APICS CPIM Learning System © 2026

A production system in which the productive equipment is organized and sequenced according to the steps involved to produce a narrow range of standard products. Material flow is continuous during the production process. The routing of the jobs is fixed, and setups are seldom changed. Examples of items produced by continuous production include gasoline, steel, fertilizer, glass, and paper. Syns.: continuous flow production, continuous manufacturing, continuous process. See: mass production, project manufacturing.

Module 4
Section B: Environments, Types, and Layouts

Term
Customer tolerance time

APICS CPIM Learning System © 2026

The amount of time potential customers are willing to wait for the delivery of a good or a service. Syn.: demand lead time.

Module 4
Section B: Environments, Types, and Layouts

Term
Decoupling points

APICS CPIM Learning System © 2026

The locations in the product structure or distribution network where inventory is placed to create independence between processes or entities. Selection of decoupling points is a strategic decision that determines customer lead times and inventory investment. See: control point.

Module 4
Section B: Environments, Types, and Layouts

Term
Delivery lead time

APICS CPIM Learning System © 2026

The time from the receipt of a customer order to the delivery of the product. Syn.: delivery cycle.

Module 4
Section B: Environments, Types, and Layouts

Term
Demand-driven material requirements planning (DDMRP)

APICS CPIM Learning System © 2026

A method for planning material needs that enables a company to build more closely to actual market requirements.

Module 4
Section B: Environments, Types, and Layouts

Term
Demand-driven supply network

APICS CPIM Learning System © 2026

A network in which a customer purchase initiates real-time information flows through the supply chain that consequently cause movement of product through the network.

Module 4
Section B: Environments, Types, and Layouts

Term
Discrete manufacturing

APICS CPIM Learning System © 2026

The production of distinct items such as automobiles, appliances, or computers. See: repetitive manufacturing.

Module 4
Section B: Environments, Types, and Layouts

Term
Engineer-to-order (ETO)

APICS CPIM Learning System © 2026

Products whose customer specifications require unique engineering design, significant customization, or new purchased materials. Each customer order results in a unique set of part numbers, bills of material, and routings. Syn.: design-to-order (DTO).

Module 4
Section B: Environments, Types, and Layouts

Term
Facility layout

APICS CPIM Learning System © 2026

A description of where machines and utilities will be located in a facility, as well as the arrangement of processes.

Module 4
Section B: Environments, Types, and Layouts

Term
Fixed-position layout

APICS CPIM Learning System © 2026

A factory layout in which the product is in a specific location and people, machines, and tools move to and from the product.

Module 4
Section B: Environments, Types, and Layouts

Term
Flow processing

APICS CPIM Learning System © 2026

In a process environment, the flow of work from one workstation to another at a nearly constant rate and with no delays. When producing discrete units, the process is called repetitive manufacturing; when producing non-discrete units over time, the process is called continuous manufacturing.

Module 4
Section B: Environments, Types, and Layouts

Term
Flow shop

APICS CPIM Learning System © 2026

A form of manufacturing organization in which machines and operators handle a standard, usually uninterrupted, material flow. The operators generally perform the same operations for each production run. A flow shop is often referred to as a mass production shop. The plant layout is designed to facilitate a product flow, where each product, though variable in specifications, uses the same flowpattern. Production is set at a given rate, and the products are generally manufactured in bulk. Some process industries (chemicals, oil, paint, etc.) are examples of flow shops. Syns.: flow line, flow manufacturing, flow plant. See: continuous manufacturing, job shop.

Module 4
Section B: Environments, Types, and Layouts

Term
Focused factory

APICS CPIM Learning System © 2026

A plant established to focus the entire manufacturing system on a limited, concise, manageable set of products, technologies, volumes, and markets precisely defined by the company's competitive strategy, technology, and economics. See: cellular manufacturing.

Module 4
Section B: Environments, Types, and Layouts

Term
Functional layout

APICS CPIM Learning System © 2026

1) A facility configuration in which operations of a similar nature or function are grouped together. 2) An organizational structure based on departmental specialty (e.g., saw, lathe, mill, heat treat, press). Syns.: job shop layout, process layout.

Module 4
Section B: Environments, Types, and Layouts

Term
Gantt chart

APICS CPIM Learning System © 2026

A common type of planning and control chart that is designed to depict graphically the relationship between planned performance and actual performance over time. The chart is mainly used for (1) machine loading, in which one horizontal line is used to represent capacity and another to represent load against that capacity; or (2) monitoring job progress, in which one horizontal line represents the production schedule and another parallel line represents the actual progress of the job against the schedule in time. Syns.: job progress chart, milestone chart.

Module 4
Section B: Environments, Types, and Layouts

Term
Group technology (GT)

APICS CPIM Learning System © 2026

An engineering and manufacturing philosophy that identifies the physical similarity of parts (common routing) and establishes their effective production. It provides for rapid retrieval of existing designs and facilitates a cellular layout.

Module 4
Section B: Environments, Types, and Layouts

Term
Intermittent production

APICS CPIM Learning System © 2026

A form of manufacturing in which the jobs pass through the functional departments in lots, and each lot may have a different routing. See: job shop.

Module 4
Section B: Environments, Types, and Layouts

Term
Job shop

APICS CPIM Learning System © 2026

1) An organization in which similar equipment is organized by function. Each job follows a distinct routing through the shop. 2) A type of manufacturing process used to produce items to each customer's specifications. Production operations are designed to handle a wide range of product designs and are performed at fixed plant locations using general-purpose equipment. Syn.: jobbing. See: flow shop, intermittent production, project manufacturing.

Module 4
Section B: Environments, Types, and Layouts

Term
Line manufacturing

APICS CPIM Learning System © 2026

Repetitive manufacturing performed by specialized equipment in a fixed sequence. See: assembly line.

Module 4
Section B: Environments, Types, and Layouts

Term
Make-to-order (MTO)

APICS CPIM Learning System © 2026

A production environment where a good or service is made after receipt of a customer's order. The final product is usually a combination of standard items and items custom-designed to meet the special needs of the customer. Where options or accessories are stocked before customer orders arrive, the term assemble-to-order (ATO) is frequently used. Syn.: build-to-order (BTO). See: assemble-to-order (ATO), make-to-stock (MTS).

Module 4
Section B: Environments, Types, and Layouts

Term
Make-to-stock (MTS)

APICS CPIM Learning System © 2026

A production environment where products can be and usually are finished before receipt of a customer order. Customer orders are typically filled from existing stocks, and production orders are used to replenish those stocks. Syn.: produce-to-stock. See: assemble-to-order (ATO), make-to-order (MTO).

Module 4
Section B: Environments, Types, and Layouts

Term
Manufacturing environment

APICS CPIM Learning System © 2026

The framework in which manufacturing strategy is developed and implemented. Elements of the manufacturing environment include external environmental forces; corporate strategy; business unit strategy; other functional strategies (marketing, engineering, finance, etc.); product selection; product/process design; product/process technology; and management competencies. The manufacturing environment description often refers to whether a company, plant, product, or service is make-to-stock (MTS), make-to-order (MTO), or assemble-to-order (ATO). Syn.: production environment. See: manufacturing strategy.

Module 4
Section B: Environments, Types, and Layouts

Term
Manufacturing lead time

APICS CPIM Learning System © 2026

The total time required to manufacture an item, exclusive of lower-level purchasing lead time. For make-to-order (MTO) products, it is the length of time between the release of an order to the production process and shipment to the final customer. For make-to-stock (MTS) products, it is the length of time between the release of an order to the production process and receipt into inventory. Manufacturing lead time includes order preparation time, queue time, setup time, run time, move time, inspection time, and put-away time. Syns.: manufacturing cycle, production cycle, production lead time. See: lead time.

Module 4
Section B: Environments, Types, and Layouts

Term
Manufacturing philosophy

APICS CPIM Learning System © 2026

The set of guiding principles, driving forces, and expected behaviors that helps communicate goals, plans, and policies to all employees and that is reinforced through conscious and subconscious behavior within the manufacturing organization. See: lean manufacturing, total quality management (TQM).

Module 4
Section B: Environments, Types, and Layouts

Term
Manufacturing process

APICS CPIM Learning System © 2026

The series of operations performed upon material to convert it from the raw material or a semifinished state to a state of further completion. Manufacturing processes can be arranged in a process layout, product layout, cellular layout, or fixed-position layout. Manufacturing processes can be planned to support make-to-stock (MTS), make-to-order (MTO), assemble-to-order (ATO), and so forth, based on the strategic use and placement of inventories. See: production process, transformation process.

Module 4
Section B: Environments, Types, and Layouts

Term
Manufacturing strategy

APICS CPIM Learning System © 2026

A group of decisions around the formulation and deployment of manufacturing resources. To be most effective, the manufacturing strategy should act in support of the overall strategic direction of the business and provide for competitive advantages. See: capacity strategy, manufacturing environment, manufacturing layout strategy, manufacturing volume strategy, production cycle element, production planning and control strategy.

Module 4
Section B: Environments, Types, and Layouts

Term
Mass customization

APICS CPIM Learning System © 2026

The use of mass production techniques to create large volume of products in a wide variety. This strategy keeps production costs low while enabling customized output primarily by utilizing postponement or delayed differentiation.

Module 4
Section B: Environments, Types, and Layouts

Term
Modular design strategy

APICS CPIM Learning System © 2026

The strategy of planning and designing products so that components or subassemblies can be used in current and future products or assembled to produce multiple configurations of a product. Automobiles and personal computers are examples of modular designs.

Module 4
Section B: Environments, Types, and Layouts

Term
Modularization

APICS CPIM Learning System © 2026

In product development, the use of standardized parts for flexibility and variety. This permits product development cost reductions by using the same item(s) to build a variety of finished goods. Modularization is the first step in developing a planning bill of material (BOM).

Module 4
Section B: Environments, Types, and Layouts

Term
Nesting

APICS CPIM Learning System © 2026

The act of combining several small processes to form one larger process.

Module 4
Section B: Environments, Types, and Layouts

Term
Option

APICS CPIM Learning System © 2026

A choice that must be made by the customer or company when customizing the end product. In many companies, the term option means a mandatory choice from a limited selection. See: feature.

Module 4
Section B: Environments, Types, and Layouts

Term
Package-to-order (PTO)

APICS CPIM Learning System © 2026

A production environment in which the packaging of a good or service is delayed until after the receipt of a customer order. The physical item is typically common across many different customers, and the packaging determines the end product for the order.

Module 4
Section B: Environments, Types, and Layouts

Term
Postponement

APICS CPIM Learning System © 2026

A product design or supply chain strategy that deliberately delays final differentiation of a product (assembly, production, packaging, tagging, etc.) until the latest possible time in the process. This shifts product differentiation closer to the consumer to reduce the anticipatory risk of producing the wrong product. The practice reduces excess finished goods in the supply chain. Syn.: delayed differentiation.

Module 4
Section B: Environments, Types, and Layouts

Term
Process flexibility

APICS CPIM Learning System © 2026

The design of the manufacturing system, including operators and machinery, that allows quick changeovers to respond to near-term changes in product volume and mix. It is a necessary tool in lean and just in time.

Module 4
Section B: Environments, Types, and Layouts

Term
Procurement lead time

APICS CPIM Learning System © 2026

The time required to design a product, modify or design equipment, conduct market research, and obtain all necessary materials. Lead time begins when a decision has been made to accept an order to produce a new product and ends when production commences. Syns.: procurement cycle, total procurement lead time. See: time-to-market.

Module 4
Section B: Environments, Types, and Layouts

Term
Product layout

APICS CPIM Learning System © 2026

Another name for flow process layout. Product layout is a system that is set up for a limited range of similar products. Focused-factory production is also considered to be in this category. See: flow processing, focused factory.

Module 4
Section B: Environments, Types, and Layouts

Term
Product-based layout

APICS CPIM Learning System © 2026

A type of layout in which resources are arranged sequentially according to the steps required to make a particular complex product.

Module 4
Section B: Environments, Types, and Layouts

Term
Production line

APICS CPIM Learning System © 2026

A series of pieces of equipment dedicated to the manufacture of a specific number of products or families.

Module 4
Section B: Environments, Types, and Layouts

Term
Project management

APICS CPIM Learning System © 2026

The use of skills and knowledge in coordinating the organizing, planning, scheduling, directing, controlling, monitoring, and evaluating of prescribed activities to ensure that the stated objectives of a project, manufactured good, or service are achieved. See: project.

Module 4
Section B: Environments, Types, and Layouts

Term
Project manufacturing

APICS CPIM Learning System © 2026

A type of manufacturing process used for large, often unique, items or structures that require a custom design capability (engineer-to-order (ETO)). This type of process is highly flexible and can cope with a broad range of product designs and design changes. This process usually uses a fixed-position type layout. See: batch (fourth definition), continuous production, fixed-position manufacturing, job shop (second definition), process manufacturing, project, repetitive manufacturing.

Module 4
Section B: Environments, Types, and Layouts

Term
Pull system

APICS CPIM Learning System © 2026

1) In production, the production of items only as demanded for use or to replace those taken for use. See: pull signal. 2) In material control, the withdrawal of inventory as demanded by the using operations. Material is not issued until a signal comes from the user. 3) In distribution, a system for replenishing field warehouse inventories in which replenishment decisions are made at the field warehouse itself, not at the central warehouse or plant.

Module 4
Section B: Environments, Types, and Layouts

Term
Purchasing lead time

APICS CPIM Learning System © 2026

The total lead time required to obtain a purchased item. Included here are order preparation and release time; supplier lead time; transportation time; and receiving, inspection, and put-away time. See: lead time, supplier lead time, time-to-product.

Module 4
Section B: Environments, Types, and Layouts

Term
Push system

APICS CPIM Learning System © 2026

1) In production, the production of items at times required by a given schedule planned in advance. 2) In material control, the issuing of material according to a given schedule or the issuing of material to a job order at its start time. 3) In distribution, a system for replenishing field warehouse inventories in which replenishment decision-making is centralized, usually at the manufacturing site or central supply facility. See: pull system.

Module 4
Section B: Environments, Types, and Layouts

Term
Remanufacturing

APICS CPIM Learning System © 2026

1) An industrial process in which worn-out products are restored to like-new condition. In contrast, a repaired product normally retains its identity, and only those parts that have failed or are badly worn are replaced or serviced. 2) The manufacturing environment where worn-out products are restored to like-new condition.

Module 4
Section B: Environments, Types, and Layouts

Term
Repetitive manufacturing

APICS CPIM Learning System © 2026

The repeated production of the same discrete products or families of products. Repetitive methodology minimizes setups, inventory, and manufacturing lead times by using production lines, assembly lines, or cells. Work orders are no longer necessary; production scheduling and control are based on production rates. Products may be standard or assembled from modules. Repetitiveness is not a function of speed or volume. Syns.: repetitive process, repetitive production. See: discrete manufacturing, project manufacturing.

Module 4
Section B: Environments, Types, and Layouts

Term
Service

APICS CPIM Learning System © 2026

Sometimes used to describe those activities that support the production or distribution functions in any organization, such as customer service and field service.

Module 4
Section B: Environments, Types, and Layouts

Term
Supplier lead time

APICS CPIM Learning System © 2026

The amount of time that normally elapses between the time an order is received by a supplier and the time the order is shipped. Syn.: vendor lead time. See: purchasing lead time.

Module 4
Section B: Environments, Types, and Layouts

Term
U-lines

APICS CPIM Learning System © 2026

Production lines shaped like the letter U. The shape allows workers to easily perform several nonsequential tasks without much walk time. The number of workstations in a U-line is usually determined by line balancing. U-lines promote communication.

Module 4
Section B: Environments, Types, and Layouts

Term
Work breakdown structure

APICS CPIM Learning System © 2026

In project management, a hierarchical description of a project in which each lower level is more detailed. See: project summary work breakdown structure.

Module 4
Section B: Environments, Types, and Layouts

Term
Work cell

APICS CPIM Learning System © 2026

Dissimilar machines grouped together into a production unit to produce a family of parts having similar routings. See: cellular layout, cellular manufacturing, U-shaped layout.

Module 4
Section C: Creating the Master Schedule

Term
Feature

APICS CPIM Learning System © 2026

A distinctive characteristic of a good or service that may be part of the standard product or an additional attribute that can be included as an upgrade. For example, in ordering a new car, the customer must specify an engine type and size (option) but need not necessarily select an air conditioner (feature). See: accessory, option.

Module 4
Section C: Creating the Master Schedule

Term
Master production schedule (MPS)

APICS CPIM Learning System © 2026

A line on the master schedule grid that reflects the anticipated build schedule for those items assigned to the master scheduler. The master scheduler maintains this schedule, and in turn, it becomes a set of planning numbers that drives material requirements planning (MRP). It represents what the company plans to produce, expressed in specific configurations, quantities, and dates. The MPS is not a sales item forecast that represents a statement of demand. It must take into account the forecast, the production plan, and other important considerations such as backlog, availability of material, availability of capacity, and management policies and goals. See: master schedule.

Module 4
Section C: Creating the Master Schedule

Term
Master schedule

APICS CPIM Learning System © 2026

A format that includes time periods (dates), the forecast, customer orders, projected available balance, available-to-promise (ATP), and the master production schedule (MPS). It takes into account the forecast; the production plan; and other important considerations such as backlog, availability of material, availability of capacity, and management policies and goals. See: master production schedule (MPS).

Module 4
Section C: Creating the Master Schedule

Term
Master scheduler

APICS CPIM Learning System © 2026

Often the job title of the person charged with the responsibility of managing, establishing, reviewing, and maintaining a master schedule for select items. Ideally, the person should have substantial product, plant, process, and market knowledge because the consequences of this individual's actions often have a great impact on customer service, material, and capacity planning. See: master production schedule (MPS).

Module 4
Section C: Creating the Master Schedule

Term
Master scheduling

APICS CPIM Learning System © 2026

The process in which the master schedule is generated and reviewed and adjustments are made to the master production schedule (MPS) to ensure consistency with the production plan. The MPS (the line on the grid) is the primary input to the material requirements plan. The sum of the MPSs for the items within the product family must equal the production plan for that family.

Module 4
Section C: Creating the Master Schedule

Term
Materials management

APICS CPIM Learning System © 2026

The grouping of management functions supporting the complete cycle of material flow, from the purchase and internal control of production materials to the planning and control of work in process (WIP) to the warehousing, shipping, and distribution of the finished product.

Module 4
Section C: Creating the Master Schedule

Term
Modular bill of material (BOM)

APICS CPIM Learning System © 2026

A type of planning bill that is arranged in product modules or options. It is often used in companies where the product has many optional features (e.g., assemble-to-order (ATO) companies, such as automobile manufacturers). See: dynamic bill of material (BOM), pseudo bill of material (BOM).

Module 4
Section C: Creating the Master Schedule

Term
Multilevel master schedule

APICS CPIM Learning System © 2026

A master scheduling technique that allows any level in an end-item's bill of material (BOM) to be master scheduled. To accomplish this, master production schedule (MPS) items must receive requirements from independent and dependent demand sources. See: two-level master schedule.

Module 4
Section C: Creating the Master Schedule

Term
Option overplanning

APICS CPIM Learning System © 2026

Scheduling extra quantities of a master schedule option greater than the expected sales for that option to protect against unanticipated demand. This schedule quantity may be planned only in the period when new customer orders are currently being accepted, typically just after the demand time fence (DTF). This technique is usually used on the second level of a two-level master scheduling approach to create a situation in which more of the individual options than of the overall family are available. See: demand time fence (DTF), hedge, planning bill of material (BOM).

Module 4
Section C: Creating the Master Schedule

Term
Planning bill of material (BOM)

APICS CPIM Learning System © 2026

An artificial grouping of items or events in bill-of-material format used to facilitate master scheduling and material planning. It may include the historical average of demand expressed as a percentage of total demand for all options within a feature or for a specific end-item within a product family. It is used as the quantity per in the planning BOM. Syn.: planning bill. See: hedge, option overplanning, production forecast, pseudo bill of material (BOM).

Module 4
Section C: Creating the Master Schedule

Term
Priority

APICS CPIM Learning System © 2026

In a general sense, the relative importance of jobs (i.e., the sequence in which jobs should be worked on). It is a separate concept from capacity.

Module 4
Section C: Creating the Master Schedule

Term
Product structure

APICS CPIM Learning System © 2026

The sequence of operations that components follow during their manufacture into a product. A typical product structure shows raw material converted into fabricated components, components put together to make subassemblies, subassemblies going into assemblies, and so forth.

Module 4
Section C: Creating the Master Schedule

Term
Production forecast

APICS CPIM Learning System © 2026

A projected level of customer demand for a feature (option, accessory, etc.) of a make-to-order (MTO) or an assemble-to-order (ATO) product. Used in two-level master scheduling, it is calculated by netting customer backlog against an overall family or product line master production schedule (MPS) and then factoring this product's available-to-promise (ATP) by the option percentage in a planning bill of material (BOM). See: assemble-to-order (ATO), planning bill of material (BOM), two-level master schedule.

Module 4
Section C: Creating the Master Schedule

Term
Projected available balance (PAB)

APICS CPIM Learning System © 2026

An inventory balance projected into the future. It is the running sum of on-hand inventory minus requirements plus scheduled receipts and planned orders. Syn.: projected available inventory. See: balance.

Module 4
Section C: Creating the Master Schedule

Term
Two-level master schedule

APICS CPIM Learning System © 2026

A master-scheduling approach in which a planning bill of material (BOM) is used to master schedule an end product or family, along with selected key features (options and accessories). See: hedge, multilevel master schedule, production forecast.

Module 4
Section E: Using and Maintaining the Master Schedule

Term
Cumulative lead time

APICS CPIM Learning System © 2026

The longest planned length of time to accomplish an activity. It is the sum of the lead time for each bill of material (BOM) path below an item. Whichever path adds up to the greatest number defines cumulative lead time. Syns.: aggregate lead time, combined lead time, composite lead time, stacked lead time. See: critical path lead time, planning horizon, planning time fence.

Module 4
Section E: Using and Maintaining the Master Schedule

Term
Demand time fence (DTF)

APICS CPIM Learning System © 2026

1) That point in time inside of which the forecast is no longer included in total demand and projected available inventory calculations. Inside this point, only customer orders are considered. Beyond this point, total demand is a combination of actual orders and forecasts. 2) In some contexts, the DTF may correspond to that point in the future inside which changes to the master schedule must be approved by an authority higher than the master scheduler. Beyond the DTF, the master scheduler may change the master production schedule (MPS) within the limits of established rescheduling rules without the approval of higher authority. See: frozen zone, option overplanning, planning time fence, time fence.

Module 4
Section E: Using and Maintaining the Master Schedule

Term
Hedge

APICS CPIM Learning System © 2026

1) An action taken in an attempt to shield the company from an uncertain event such as a strike, price increase, or currency reevaluation. 2) In master scheduling, a scheduled quantity to protect against uncertainty in demand or supply. The hedge is similar to safety stock, but a hedge has the dimension of timing as well as amount. A volume hedge or market hedge represents excess quantities planned at the master schedule or production plan level over and above the demand quantities in given periods beyond a time fence such that, if the hedge is not needed, the planned quantities can be rolled forward before major resources must be committed to produce the hedge. A product mix hedge is an approach in which several interrelated optional items are overplanned. See: option overplanning, planning bill of material (BOM), safety stock, time fence, two-level master schedule.

Module 4
Section E: Using and Maintaining the Master Schedule

Term
Planning time fence

APICS CPIM Learning System © 2026

A point in time denoted in the planning horizon of the master scheduling process that marks a boundary inside of which changes to the schedule may adversely affect component schedules, capacity plans, customer deliveries, and cost. Outside the planning time fence, customer orders can be booked, and changes to the master schedule can be made within the constraints of the production plan. Changes inside the planning time fence must be made manually by the master scheduler. Syn.: planning fence. See: cumulative lead time, demand time fence (DTF), firm planned order (FPO), liquid zone, planned order, planning horizon, slushy zone, time fence.

Module 4
Section E: Using and Maintaining the Master Schedule

Term
Time fence

APICS CPIM Learning System © 2026

A policy or guideline established to note where various restrictions or changes in operating procedures take place. For example, changes to the master production schedule (MPS) can be accomplished easily beyond the cumulative lead time, while changes inside the cumulative lead time become increasingly more difficult to a point where changes should be resisted. Time fences can be used to define these points. See: demand time fence (DTF), frozen zone, hedge, planning time fence.

Module 4
Section F: Material Requirements Planning

Term
Action message

APICS CPIM Learning System © 2026

An output of a system that identifies the need for, and the type of action to be taken to correct, a current or potential problem. Examples of action messages in a material requirements planning (MRP) system include release order, reschedule in, reschedule out, and cancel. See: exception message, action report.

Module 4
Section F: Material Requirements Planning

Term
Allocation

APICS CPIM Learning System © 2026

1) The classification of resources or item quantities that have been assigned to specific customer or manufacturing orders but have not yet been shipped to the customer or released from the stockroom to production. 2) A process used to distribute material in short supply. Syn.: assignment. See: reservation.

Module 4
Section F: Material Requirements Planning

Term
Bill of material (BOM)

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1) A listing of all the subassemblies, intermediates, parts, and raw materials that go into a parent assembly as well as the quantity of each item required to make an assembly. It is used in conjunction with the master production schedule (MPS) to determine the items for which purchase requisitions and production orders must be released. A variety of display formats exists for BOMs, including the single-level BOM, indented BOM, modular (planning) BOM, transient BOM, matrix BOM, and costed BOM. 2) A list of all the materials needed by a contract manufacturer to make one production run of a product's piece parts or components for its customers. The BOM may also be called the formula, recipe, or ingredients list in certain process industries. See: formula.

Module 4
Section F: Material Requirements Planning

Term
Bill-of-material explosion

APICS CPIM Learning System © 2026

The process of determining component identities, quantities per assembly, and other parent-component relationship data for a parent item. Explosion may be single level, indented, or summarized.

Module 4
Section F: Material Requirements Planning

Term
Bottom-up replanning

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In material requirements planning (MRP), the process of using pegging data to solve material availability problems or other problems. This process is accomplished by the planner (not the computer system), who evaluates the effects of possible solutions. Potential solutions include compressing lead time, cutting order quantity, substituting material, and changing the master schedule.

Module 4
Section F: Material Requirements Planning

Term
Closed-loop MRP

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A method of material requirements planning (MRP) that incorporates production planning, sales and operations planning (S&OP), master scheduling, and capacity requirements planning (CRP). Once the initial planning phase is completed and the plans have been accepted as realistic and attainable, the execution processes come into play. These include the control processes of input-output control and detailed scheduling and dispatching. Feedback is received on actual performance to the plans, which is then used to re-evaluate the plans in order to keep them valid.

Module 4
Section F: Material Requirements Planning

Term
Explode

APICS CPIM Learning System © 2026

To perform a bill-of-material explosion.

Module 4
Section F: Material Requirements Planning

Term
Firm planned order (FPO)

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A planned order that can be frozen in quantity and time. The order is not changed automatically to balance supply and demand, but it can be overridden by the planner. This technique can aid planners working with material requirements planning (MRP) to respond to material and capacity problems by firming up selected planned orders. See: nervousness, planning time fence.

Module 4
Section F: Material Requirements Planning

Term
Gross requirement

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The total of independent and dependent demand for a component before the netting of on-hand inventory and scheduled receipts.

Module 4
Section F: Material Requirements Planning

Term
Item record

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The master record for an item that typically contains identifying and descriptive data and control values (lead times, lot sizes, etc.). It may also provide data about inventory status, requirements, planned orders, and costs. Item records are linked by bill-of-material records (or product structure records), thus defining the bill of material (BOM). Syns.: item master, part master record, part record.

Module 4
Section F: Material Requirements Planning

Term
Lead time offset

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A technique used in material requirements planning (MRP) in which a planned order receipt in one time period requires the release of that order in an earlier time period based on the lead time for the item. Syns.: component lead time offset, offsetting.

Module 4
Section F: Material Requirements Planning

Term
Material requirements planning (MRP)

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A set of techniques that uses bill of material (BOM) data, inventory data, and the master production schedule (MPS) to calculate requirements for materials. It makes recommendations to release replenishment orders for material. Further, because it is time phased, it makes recommendations to reschedule open orders when due dates and need dates are not in phase.

Module 4
Section F: Material Requirements Planning

Term
Multilevel bill of material (BOM)

APICS CPIM Learning System © 2026

A display of all the components directly or indirectly used in a parent, together with the quantity required of each component. If a component is a subassembly, blend, intermediate, etc., all its components and all their components also will be exhibited, down to purchased parts and raw materials. See: indented bill of material (BOM).

Module 4
Section F: Material Requirements Planning

Term
Net requirement

APICS CPIM Learning System © 2026

In material requirements planning (MRP), the net requirements for a part or an assembly are derived as a result of applying gross requirements and allocations against inventory on hand, scheduled receipts, and safety stock. After being adjusted for lot size and offset for lead time, net requirements become planned orders.

Module 4
Section F: Material Requirements Planning

Term
On-hand balance

APICS CPIM Learning System © 2026

The quantity shown in the inventory records as being physically in stock.

Module 4
Section F: Material Requirements Planning

Term
Parent item

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The item produced from one or more components. Syn.: parent.

Module 4
Section F: Material Requirements Planning

Term
Part requisition

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An authorization that identifies the item and quantity required to be withdrawn from an inventory. Syn.: requisition. See: purchase requisition.

Module 4
Section F: Material Requirements Planning

Term
Phantom bill of material (BOM)

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A BOM coding and structuring technique used primarily for transient (nonstocked) subassemblies. For the transient item, lead time is set to zero and the order quantity to lot-for-lot. A phantom BOM represents an item that is physically built but rarely stocked before being used in the next step or level of manufacturing. This permits material requirements planning (MRP) logic to drive requirements straight through the phantom item to its components, although the MRP system usually retains its ability to net against any occasional inventories of the item. This technique also facilitates the use of common bills of material for engineering and manufacturing. Syns.: blowthrough, transient bill of material (BOM). See: pseudo bill of material (BOM).

Module 4
Section F: Material Requirements Planning

Term
Planned order

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A suggested order quantity, release date, and due date created by the planning system's logic when it encounters net requirements in processing material requirements planning (MRP). In some cases, it can also be created by a master scheduling module. Planned orders are created by the computer, exist only within the computer, and may be changed or deleted by the computer during subsequent processing if conditions change. Planned orders at one level will be exploded into gross requirements for components at the next level. Planned orders, along with released orders, serve as input to capacity requirements planning (CRP) to show the total capacity requirements by work center in future time periods. See: planning time fence.

Module 4
Section F: Material Requirements Planning

Term
Planned order receipt

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The quantity planned to be received at a future date as a result of a planned order release. Planned order receipts differ from scheduled receipts in that they have not been released. Syn.: planned receipt.

Module 4
Section F: Material Requirements Planning

Term
Planned order release

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A row on a material requirements planning (MRP) table that is derived from planned order receipts by taking the planned receipt quantity and offsetting it to the left by the appropriate lead time. See: order release.

Module 4
Section F: Material Requirements Planning

Term
Pull system

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1) In production, the production of items only as demanded for use or to replace those taken for use. See: pull signal. 2) In material control, the withdrawal of inventory as demanded by the using operations. Material is not issued until a signal comes from the user. 3) In distribution, a system for replenishing field warehouse inventories in which replenishment decisions are made at the field warehouse itself, not at the central warehouse or plant.

Module 4
Section F: Material Requirements Planning

Term
Push system

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1) In production, the production of items at times required by a given schedule planned in advance. 2) In material control, the issuing of material according to a given schedule or the issuing of material to a job order at its start time. 3) In distribution, a system for replenishing field warehouse inventories in which replenishment decision-making is centralized, usually at the manufacturing site or central supply facility. See: pull system.

Module 4
Section F: Material Requirements Planning

Term
Requirements explosion

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The process of calculating the demand for the components of a parent item by multiplying the parent item requirements by the component usage quantity specified in the bill of material (BOM). Syn.: explosion.

Module 4
Section F: Material Requirements Planning

Term
Rescheduling

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The process of changing order or operation due dates, usually as a result of their being out of phase with production or customer commitments.

Module 4
Section F: Material Requirements Planning

Term
Scheduled receipt

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An open order that has an assigned due date. See: on-order stock, open order.

Module 4
Section F: Material Requirements Planning

Term
Scrap

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Material outside of specifications and possessing characteristics that make rework impractical.

Module 4
Section F: Material Requirements Planning

Term
Scrap factor

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A factor that expresses the quantity of a particular component that is expected to be scrapped upon receipt from a vendor, upon completion of production, or while that component is being built into a given assembly. It is usually expressed as a decimal value. For a given operation or process, the scrap factor plus the yield factor is equal to 1. For example, if the scrap factor is 30 percent (or .3), then the yield is 70 percent (or .7). In manufacturing planning and control systems, the scrap factor is usually related to a specific item in the item master but may be related to a specific component in the product structure. For example, if 50 units of a product are required by a customer and a scrap factor of 30 percent (a yield of 70 percent) is expected, then 72 units (computed as 50 units divided by .7) should be started in the manufacturing process. Syn.: scrap rate. See: yield, yield factor.

Module 4
Section F: Material Requirements Planning

Term
Single-level bill of material (BOM)

A display of components that are directly used in a parent item. It shows only the relationships one level down. See: flat bill of material (BOM).

Module 4
Section F: Material Requirements Planning

Term
Summarized bill of material (BOM)

A form of multilevel BOM that lists all the parts and their quantities required in a given product structure. Unlike the indented BOM, it does not list the levels of manufacture and lists a component only once for the total quantity used.

Module 4
Section F: Material Requirements Planning

Term
Yield

The amount of good or acceptable material available after the completion of a process. It is usually computed as the final amount divided by the initial amount converted to a decimal or percentage. In manufacturing planning and control systems, yield is usually related to specific routing steps or to the parent item to determine how many units should be scheduled to produce a specific number of finished goods. For example, if 50 units of a product are required by a customer and a yield of 70 percent is expected, then 72 units (computed as 50 units divided by .7) should be started in the manufacturing process. Syn.: material yield. See: scrap factor, yield factor.

Module 4
Section F: Material Requirements Planning

Term
Yield factor

A measurement of the yield of a process. For a specific process or operation, yield factor plus scrap factor equals 1. See: scrap factor, yield.

Module 4

Section G: Capacity Requirements Planning, Order Promising, and Final Assembly Scheduling

Term
Available inventory

APICS CPIM Learning System © 2026

The on-hand inventory balance minus allocations, reservations, backorders, and (usually) quantities held for quality problems. This is often called beginning available balance. Syns.: beginning available balance, net inventory.

Module 4

Section G: Capacity Requirements Planning, Order Promising, and Final Assembly Scheduling

Term
Available-to-promise (ATP)

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1) In operations, the uncommitted portion of a company's inventory and planned production maintained in the master schedule to support customer-order promising. The ATP quantity is the uncommitted inventory balance in the first period and is normally calculated for each period in which a master production schedule (MPS) receipt is scheduled. In the first period, ATP includes on-hand inventory less customer orders that are due and overdue. Three methods of calculation are used: discrete ATP, cumulative ATP with look-ahead, and cumulative ATP without look-ahead. 2) In logistics, the quantity of a finished good that is or will be available to commit to a customer order based on the customer's required ship date. To accommodate deliveries on future dates, ATP is usually time phased to include anticipated purchases or production receipts. See: cumulative available-to-promise, discrete available-to-promise (ATP).

Module 4

Section G: Capacity Requirements Planning, Order Promising, and Final Assembly Scheduling

Term
Capacity requirements planning (CRP)

APICS CPIM Learning System © 2026

The function of establishing, measuring, and adjusting limits or levels of capacity. In this context, the term refers to the process of determining in detail the amount of labor and machine resources required to accomplish the tasks of production. Open shop orders and planned orders in the material requirements planning (MRP) system are input to CRP, which, through the use of parts routings and time standards, translates these orders into hours of work by work center by time period. Even though rough-cut capacity planning (RCCP) may indicate that sufficient capacity exists to execute the master production schedule (MPS), CRP may show that capacity is insufficient during specific time periods. See: capacity planning.

Module 4

Section G: Capacity Requirements Planning, Order Promising, and Final Assembly Scheduling

Term
Cumulative available-to-promise

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A calculation based on the available-to-promise (ATP) figure in the master production schedule (MPS). Two methods of computing the cumulative ATP are used: with and without look-ahead calculation. The cumulative with look-ahead ATP equals: (The ATP from the previous period + The MPS of the period) – (The backlog of the period – The differences between the backlogs and MPSs of all future periods until, but not to include, the period where point production exceeds the backlogs). The cumulative without look-ahead procedure equals: (The ATP from the previous period + The MPS) – (The backlog in the period being considered). See: available-to-promise (ATP).

Module 4

Section G: Capacity Requirements Planning, Order Promising, and Final Assembly Scheduling

Term
Discrete available-to-promise

APICS CPIM Learning System © 2026

A method for determining the available-to-promise (ATP) quantities in the master production schedule (MPS). For the first period, the ATP is the sum of the beginning inventory plus the MPS quantity minus backlog for all periods until the item is master scheduled again. For all other periods, if a quantity has been scheduled for that time period, then the ATP is this quantity minus all customer commitments for this and other periods until another quantity is scheduled in the MPS. For those periods when the quantity scheduled is zero, the ATP is zero (even if deliveries have been promised). The promised customer commitments are accumulated and shown in the period when the item was most recently scheduled. Syn.: incremental available-to-promise. See: available-to-promise (ATP).

Module 4

Section G: Capacity Requirements Planning, Order Promising, and Final Assembly Scheduling

Term
Final assembly schedule (FAS)

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A schedule of end-items to finish the product for specific customers' orders in a make-to-order (MTO) or assemble-to-order (ATO) environment. It is also referred to as the finishing schedule because it may involve operations other than the final assembly, such as final mixing, cutting, or packaging. The FAS is prepared after receipt of a customer order and is constrained by the availability of material and capacity. It schedules the operations required to complete the product from the level where it is stocked (or master scheduled) to the end-item level.

Module 4

Section G: Capacity Requirements Planning, Order Promising, and Final Assembly Scheduling

Term
Gateway work center

APICS CPIM Learning System © 2026

A work center that performs the first operation of a particular routing sequence.

Module 4

Section G: Capacity Requirements Planning, Order Promising, and Final Assembly Scheduling

Term
On-hand balance

APICS CPIM Learning System © 2026

The quantity shown in the inventory records as being physically in stock.

Module 4

Section G: Capacity Requirements Planning, Order Promising, and Final Assembly Scheduling

Term
Order entry

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The process of accepting and translating what a customer wants into an order for the supplier. This can be as simple as creating shipping documents for finished goods in a make-to-stock (MTS) environment or a more complicated series of activities, including design efforts for make-to-order (MTO) or assemble-to-order (ATO) products. See: master schedule, order service.

Module 4

Section G: Capacity Requirements Planning, Order Promising, and Final Assembly Scheduling

Term
Order promising

APICS CPIM Learning System © 2026

The process of committing to a delivery date for a customer order. For make-to-order (MTO) products, this usually involves a check of uncommitted material and availability of capacity, often as represented by the master schedule available-to-promise (ATP). Syn.: customer order promising. See: available-to-promise (ATP), order service.

Module 4

Section G: Capacity Requirements Planning, Order Promising, and Final Assembly Scheduling

Term
VATI analysis

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In theory of constraints, a procedure for determining the general flow of parts and products from raw materials to finished products (logical product structure). A V logical structure starts with one or a few raw materials, and the product expands into a number of different products as it flows through divergent points in its routings. The shape of an A logical structure is dominated by converging points. Many raw materials are fabricated and assembled into a few finished products. A T logical structure consists of numerous similar finished products assembled from common assemblies, subassemblies, and parts. An I logical structure is the simplest of production flows, in which resources are shared between or among different products and the flow is in a straight-line sequence (e.g., an assembly line). Once the general parts flow is determined, the system control points (gating operations, convergent points, divergent points, constraints, and shipping points) can be identified and managed.

Module 4

Section H: Changes and Supply Disruptions

Term
Safety lead time

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An element of time added to normal lead time to protect against fluctuations in lead time so that an order can be completed before its real need date. When used, the material requirements planning (MRP) system, in offsetting for lead time, will plan both order release and order completion for earlier dates than it would otherwise. Syns.: protection time, safety time.

Module 4
Section D: Rough-Cut Capacity Planning and MPS Validation

Term
Bill of resources

APICS CPIM Learning System © 2026

A listing of the required capacity and key resources needed to manufacture one unit of a selected item or family. Rough-cut capacity planning (RCCP) uses these bills to calculate the approximate capacity requirements of the master production schedule (MPS). Resource planning may use a form of this bill. Syn.: bill of capacity. See: bill of labor, capacity bill procedure, capacity planning using overall factors (CPOF), product load profile, resource profile, rough-cut capacity planning (RCCP), routing.

Module 4
Section D: Rough-Cut Capacity Planning and MPS Validation

Term
Capacity bill procedure

APICS CPIM Learning System © 2026

A rough-cut capacity planning (RCCP) method that takes into account any shifts in product mix. Bill of material (BOM) and routing information are required with direct labor-hour or machine-hour data available for each operation. See: bill of labor, bill of resources.

Module 4
Section D: Rough-Cut Capacity Planning and MPS Validation

Term
Capacity planning using overall factors (CPOF)

APICS CPIM Learning System © 2026

A rough-cut capacity planning (RCCP) technique. The master schedule items and quantities are multiplied by the total time required to build each item to provide the total number of hours to produce the schedule. Historical work center percentages are then applied to the total number of hours to provide an estimate of the hours per work center to support the master schedule. This technique eliminates the need for engineered time standards. Syn.: overall factors. See: bill of resources, capacity planning, resource profile, rough-cut capacity planning (RCCP).

Module 4
Section D: Rough-Cut Capacity Planning and MPS Validation

Term
Overstated master production schedule (MPS)

APICS CPIM Learning System © 2026

A schedule that includes either past-due quantities or quantities with loads that are greater than the current capacity and material availability allows. An overstated master production schedule (MPS) should be modified into a feasible schedule before running material requirements planning (MRP).

Module 4
Section D: Rough-Cut Capacity Planning and MPS Validation

Term
Pegging

APICS CPIM Learning System © 2026

In material requirements planning (MRP) and master production scheduling, the ability to identify for a given item the sources of its gross requirements and/or allocations. Pegging can be thought of as active where-used information. See: capacity pegging, requirements traceability, where-used list.

Module 4
Section D: Rough-Cut Capacity Planning and MPS Validation

Term
Product load profile

APICS CPIM Learning System © 2026

A listing of the required capacity and key resources needed to manufacture one unit of a selected item or family. The resource requirements are further defined by a lead time offset to predict the impact of the product on the load of the key resources by specific time period. The product load profile can be used for rough-cut capacity planning (RCCP) to calculate the approximate capacity requirements of the master production schedule (MPS). See: bill of resources, resource profile, rough-cut capacity planning (RCCP).

Module 4
Section D: Rough-Cut Capacity Planning and MPS Validation

Term
Resource profile

APICS CPIM Learning System © 2026

The standard hours of load placed on a resource by time period. Production lead-time data is taken into account to provide time-phased projections of the capacity requirements for individual production facilities. See: bill of resources, capacity planning using overall factors (CPOF), product load profile, rough-cut capacity planning (RCCP).

Module 4
Section D: Rough-Cut Capacity Planning and MPS Validation

Term
Rough-cut capacity planning (RCCP)

APICS CPIM Learning System © 2026

The process of converting the master production schedule (MPS) into requirements for key resources, often including labor; machinery; warehouse space; suppliers' capabilities; and, in some cases, money. Comparison with available or demonstrated capacity is usually done for each key resource. This comparison assists the master scheduler in establishing a feasible MPS. Three approaches to performing RCCP are the bill of labor (resources and capacity) approach, the capacity planning using overall factors approach, and the resource profile approach. See: bill of resources, capacity planning, capacity planning using overall factors (CPOF), product load profile, resource profile.