

Production planning and control — Vocabulary

ICS 01.040.03; 03.100.50

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee MS/3, Logistics in manufacturing and distribution, upon which the following bodies were represented:

- British Computer Society (BCS)
- Chartered Institute of Management Accountants
- Institute of Logistics
- Institute of Operations Management
- The University of Nottingham
- University of Manchester Institute of Science and Technology (UMIST)
- Co-opted Members

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 9 July 2004

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First published February 1975
Second edition July 2004

Amendments issued since publication

Amd. No.	Date	Comments

The following BSI references relate to the work on this British Standard:
Committee reference MS/3
Draft for comment 02/400740 DC

ISBN 0 580 43768 X

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Foreword

This British Standard has been prepared by Technical Committee MS/3. It supersedes BS 5191:1975 which is withdrawn.

This vocabulary has been produced in response to a demand from practitioners and trainers for a guide to definitions of the terms used in production planning and control.

The number of terms has increased from 300 in the 1975 edition to nearly 1 000 in the current edition of the standard, largely as a result of the advent of Japanese manufacturing culture and the availability in the workplace of low cost computer systems.

The definitions are drawn from the previously published version of this standard, the tenth edition of the APICS dictionary [1] published by APICS – The Educational Society for Resource Management, the European Logistics Association (ELA) glossary of logistics terminology [2], and from CEN, ISO and British Standards. Some of the definitions have been amended or developed to clarify the logistics meaning.

Terms are listed alphabetically in the index and are referred to by numbers, which are found against the terms in the body of this document.

Alternative terms are given in medium type below the preferred terms. These terms are not individually numbered, but are included in the index with a reference to the preferred term.

Bold words indicate terms that are defined elsewhere in this standard.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 113 and a back cover.

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1 Scope

This British Standard defines terms used in the planning, execution and control of manufacturing operations for communication between staff in the manufacturing sector. It includes terms relevant to internal operation and terms used in procurement.

This British Standard also defines some of the terms used in the manufacturing sector when designing products, receiving materials, shipping goods, marketing goods and accounting for operations. However, it is not comprehensive in these fields and defines only terms considered important to operational staff.

2 Production planning and control terminology

2.1

ABC analysis

method of analysis where **items** (2.400) are sorted into sequential order by historical or anticipated consumption, multiplied by unit value and stratified into classes

cf. **ABC classification** (2.2)

NOTE ABC analysis should not be confused with **activity based costing** (2.10), the acronym of which is ABC.

2.2

ABC classification

<process> classification of a group of products into three or more categories on the basis of an **ABC analysis** (2.1)

NOTE The classification is made, for purposes such as **stock control** (2.812) and **planning** (2.603), with the criterion being, for example, the **demand** (2.221), the consumption value, or turnover value in a given period.

cf. **Pareto's rule** (2.573), **production** (2.641), **A product** (2.35), **B product** (2.95), **C product** (2.189)

2.3

ABC classification

<result> result of an **ABC analysis** (2.1)

2.4

ABC stock control

stock control (2.812) based on an **ABC classification** (2.2) of products

2.5

abnormal demand

unanticipated change in the level of **sales orders** (2.739)

2.6

absorption costing

method of costing whereby **fixed costs** (2.322) as well as **variable costs** (2.895) are allocated to the product cost

NOTE The term may be applied where either **production costs** (2.645) only, or costs of all functions, are allocated.

2.7

accepted order

order (2.524) that has been authorized for execution

2.8

accessory

feature that can be supplied separately and that is not normally built into the product as an **option** (2.523)

NOTE An example of an **accessory** is mud flaps for a car.

2.9

active stock

stock (2.808) that will be used or sold within a given period

NOTE This stock includes **raw material** (2.691), **work in progress** (2.914) and **finished products** (2.312).

2.10

activity based costing

ABC

method of attributing **indirect costs** (2.379) to products on the basis of the extent to which individual products attract these particular costs

NOTE **Indirect costs** are classified according to their causes.

2.11

activity planning

planning (2.603) of all the activities of a division or department for a particular calendar year drawn up on the basis of rules applying to the entire enterprise forming the basis for budgeting

2.12

actual demand

demand (2.221) that represents the sum of **orders** (2.524) that have been placed by customers for delivery in a given period

2.13

actual stock

stock-on-hand

quantity of **stock** (2.808) in existence at a particular moment in time

2.14

add/delete bill of materials

planning bill of materials (2.604) to forecast **options** (2.523) where one **item** (2.400) can be replaced by another item

2.15

additional requirement

requirement that is additional to the current **bill of materials** (2.79)

2.16

advanced planning and scheduling

APS

decision support tools in **planning** (2.603) and scheduling employing computer based optimization with multiple **constraints** (2.172)

NOTE See Figure 3.

2.17

advice note

document sent to a customer advising the customer of impending delivery

2.18

aggregate forecast

estimate of sales for a **grouping** (2.362) of products, or for all products produced by a manufacturing facility

cf. **planning** (2.603)

NOTE The **aggregate forecast** is stated in terms of quantity and/or value. It is used for **sales and operations planning** (2.737) purposes and to control the total company forecast.

2.19

aggregate inventory

inventory for any **grouping** (2.362) of **items** (2.400) or products, involving multiple **stock keeping units** (2.817)

NOTE Adapted from APICS Dictionary [1].

2.20

aggregate plan

total plan that represents the sum of the plans for all **items** (2.400)

2.21**agile manufacturing**

manufacturing where versatile resources are organized to respond quickly and precisely to a varying **demand** (2.221) for a varying **product specification** (2.659)

2.22**ahead of schedule**

earlier than was planned or instructed

2.23**allocated material**

material on hand and/or on order assigned to a specific **order** (2.524)

cf. **reserved material** (2.719)

2.24**allocation**

division and/or assignment of goods, activities, **capacity** (2.119), costs, and/or resources to organizational units

cf. **reserved material** (2.719)

NOTE Examples of organizational units to which goods etc. may be allocated include customers, suppliers, factories, departments and products.

2.25**all-time order**

last **order** (2.524) for a particular product in the last phase of its life cycle

NOTE An **all-time order** is of such a size that the total expected future **demand** (2.221) for and/or consumption of a particular product can be satisfied.

2.26**all-time requirement**

quantity of an **item** (2.400) required to meet all expected future **demands** (2.221)

NOTE The **all-time requirement** is used for products in the last phase of their life cycles, when **production** (2.641) has stopped or nearly stopped.

2.27**alternative feedstock**

backup **supply** (2.847) of an **item** (2.400) to act either as a substitute or to be used with alternative equipment

2.28**alternative operation**

replacement for a normal step in a **manufacturing process** (2.459)

NOTE Adapted from APICS Dictionary [1].

2.29**alternative routing**

routing (2.727), less preferred than the **primary routing** (2.622), but resulting in an identical **item** (2.400)

NOTE **Alternative routings** may be maintained in a computer or off-line, via manual methods.

2.30**annual contract**

negotiated agreement between a vendor and a customer for one year that sets pricing, helps ensure continuous **supply** (2.847) of material, and provides the supplier with estimated future requirements

cf. **call-off** (2.114)

2.31**anticipated delay report**

exception report (2.279) indicating the date at which an order that will not meet its original **due date** (2.253) is expected to be complete

2.32

anticipated shortage report

exception report (2.279) listing **jobs** (2.404) or **purchase orders** (2.674) that will not be completed on time, together with the effects on plans

2.33

anticipation stock

stock (2.808) formed in order to provide for foreseeable fluctuations in the **demand** (2.221) for, and the delivery or **production** (2.641) of, a particular product

NOTE An example of **anticipation stock** is **seasonal stock** (2.755).

2.34

approved demand

units ordered and accepted in an ordering system, due for immediate delivery

NOTE **Forward orders** (2.340) become **approved demand** when they are released for immediate delivery.

2.35

A product

product that according to an **ABC classification** (2.2) belongs to a small group of products that represents a large part of the total value consumed or produced

2.36

assembled product

product assembled from **parts** (2.574) and/or materials

2.37

assemble to order

type of manufacturing where components and/or **sub-assemblies** (2.839) are assembled or configured only when a **sales order** (2.739) is received

2.38

assembly

<item> combination of **parts** (2.574) and possibly **raw materials** (2.691) put together to make up a composite product

2.39

assembly

<stage of production> stage of **production** (2.641) where **parts** (2.574) and **raw materials** (2.691) are put together into an assembled **part** or an **assembled product** (2.36)

2.40

assembly group

organizational unit that contains all the people and facilities it needs to complete the **assembly** (2.38) or a major **sub-assembly** (2.839) of a product

2.41

assembly lead time

period of time between the issue of a **work order** (2.918) to the assembly floor and delivery of the **assembled product** (2.36) to the **store** (2.835) or receiving organization

NOTE See Figure 7.

2.42

assembly level

relative position of a **part** (2.574) or **sub-assembly** (2.839) within a hierarchy of **assemblies** (2.39)

NOTE 1 It is recommended that a **final assembly** (2.307) be designated **assembly level 0**; the **sub-assemblies** and/or parts constituting a **final assembly** should be designated assembly level 1, 2, and so on.

NOTE 2 A particular **part** or **sub-assembly** may appear at more than one level in the hierarchy.

NOTE 3 See Figure 1.

2.43**assembly order**

work order (2.918) sent to an assembly department authorizing it to put components together into an **assembly** (2.38)

2.44**assembly parts list**

list of all **parts** (2.574) and **sub-assemblies** (2.839) comprising a particular **assembly** (2.38), as used in the **manufacturing process** (2.459)

NOTE Adapted from APICS Dictionary [1].

2.45**assembly schedule**

detailed **schedule** (2.744) of time and sequence planned for the **assembly** (2.39) of a product

NOTE Adapted from BS 5192-1:1993.

2.46**automated guided vehicle****AGV**

unmanned vehicle controlled electronically

NOTE **Automated guided vehicles** are often used for the transfer of material within plants or as mobile workbenches.

2.47**automated storage/retrieval system****AS/RS**

high-density rack storage system where vehicles automatically load and unload the racks

2.48**automatic identification**

identification of an **item** (2.400) by a machine which automatically enters the necessary data into a computer

2.49**available capacity**

capacity (2.120) that is free for use in a particular period

NOTE 1 **Available capacity** is calculated from the total capacity minus any capacity already reserved.

NOTE 2 **Available capacity** can occur, for example, in a machine, a means of transport, or a warehouse.

2.50**available material**

total on hand **stock** (2.808) plus **stock on order** (2.821) minus any **allocations** (2.24)

2.51**available stock**

quantity of unallocated **stock** (2.808) available to meet **orders** (2.524)

cf. **available to promise** (2.53)

2.52**available time**

time before the **due date** (2.253) that is available for **operations** (2.518) between the placing of a **work order** (2.918) and the **due date**

NOTE See Figure 5.

2.53**available to promise****ATP**

uncommitted portion of a company's **stock** (2.808) or planned **production** (2.641) of an **item** (2.400)

cf. **capable to promise** (2.118)

NOTE The **available to promise** quantity is frequently calculated from the **master production schedule** (2.469).

2.54

available work

material that is actually in a department ready to be worked on

NOTE 1 Adapted from APICS Dictionary [1].

NOTE 2 This is as distinct from scheduled work that might not yet be physically on hand.

2.55

backflow

flow of material to an earlier stage for further processing

2.56

backflushing

post deduct

auto issue

deduction, from **stock records** (2.830), of the **component parts** (2.151) used in a **parent item** (2.572) through an **explosion** (2.286) of the **bill of materials** (2.79) by the production count of **parent items** produced

2.57

backlog

quantity of goods ordered by customers but not yet delivered

2.58

back order

order for a product, the **stock** (2.808) of which was insufficient to fulfil that order

2.59

back scheduling

backward scheduling

scheduling method in which a production schedule is produced by working backwards from the required **due date** (2.253) in order to predict the **latest start date** (2.423) consistent with meeting that **due date** cf. **master production schedule** (2.469), **schedule** (2.744)

2.60

balanced product set

set of all the components needed to complete a particular **assembly** (2.38)

2.61

balanced scorecard

set of enterprise-wide performance measures designed to drive a business towards strategic objectives

2.62

balancing operations

matching the **output** (2.548) rates of sequential **operations** (2.518) to minimize **surplus stock** (2.850) and maximize use of the **limiting operation** (2.431)

2.63

balancing workload

running a manufacturing organization or production unit with the aim of achieving an optimum utilization of resource without excessive variation

2.64

bar coding

encoding of data for fast and accurate readability by means of a machine readable series of bars and spaces that represent characters

2.65**base stock system**

stock base system

ordering system in which a fixed (or base) **stock** (2.808) is established for every **item** (2.400)

NOTE 1 Any issue from **stock** is immediately followed by the issue of a new **order** (2.524) for the same quantity to the preceding stage; this in turn causes **orders** to be issued to all previous stages and finally to the material supplier.

NOTE 2 Adapted from BS 5192-1:1993.

2.66**batch**

quantity of a material or set of items that is or are treated and identified as a single entity with respect to specific **operations** (2.518)

cf. **lot** (2.440)

NOTE 1 Particular operations that use batches include handling, processing, **purchasing** (2.677), **production** (2.641) and transport.

NOTE 2 This definition also applies in process industries.

2.67**batch added value**

increase in the value of a **batch** (2.66) of material due to the work performed during manufacture

2.68**batch buying**

purchasing (2.677) system in which each **purchase order** (2.674) covers a specified quantity of an **item** (2.400) for delivery by a single specified **due date** (2.253)

2.69**batch costing**

form of **order costing** (2.528) in which the attribution of costs is based on accumulated expenditure against a specific **batch** (2.66)

2.70**batch identification card**

card giving identification of a **batch** (2.66) that travels with the **job** (2.404) in which that batch is used

2.71**batch material cost**

cost of component materials in a **batch** (2.66), not including costs of labour or overhead

2.72**batch production**

production (2.641) process in which a product or products are produced in **batches** (2.66) and where each separate **batch** consists of a quantity of the same product

2.73**batch quantity**

quantity of material or number of **items** (2.400) in a **batch** (2.66)

NOTE Adapted from BS 5192-1:1993.

2.74**batch sizing**

process of calculating the quantity of material in a **batch** (2.66) according to a rule

2.75**batch splitting**

procedure in which a **batch** (2.66) is subdivided into two or more quantities to facilitate processing or hasten completion of a portion of the **batch**

NOTE Where any form of **batch splitting** involving the reconstitution of the original **batch** is used, the assumption, for quality control purposes, that the products in the **batch** are manufactured under the same conditions, might not be valid.

2.76

batch throughput time

time required to complete the manufacture of a **batch** (2.66) of **parts** (2.574), from the issue of materials to the workshop to completion of the last part in the **batch**

NOTE See Figure 9.

2.77

benchmarking

process of mutual comparison of performance between enterprises, involving a clear understanding of current processes and open exchange of data for the purpose of improvement

2.78

best before date

use by date

date by which it is recommended that a product be used to ensure the planned **quality** (2.679) level

2.79

bill of materials

BOM

quantified list of all of the **raw materials** (2.691), **parts** (2.574), and **sub-assemblies** (2.839) that constitute a particular **assembly** (2.38)

NOTE The list may or may not be structured to show the **assembly levels** (2.42) pertaining to each **item** (2.400) on the list.

2.80

bill of materials processor

BOMP

computer program for maintaining and retrieving **bill of materials** (2.79) information

NOTE Adapted from APICS Dictionary [1].

2.81

bill of materials structuring

process of organizing **bills of materials** (2.79) to perform specific functions

NOTE Adapted from APICS Dictionary [1].

2.82

bill of process

list of processes, with their associated materials, resources, **tooling** (2.869), energy and “bill of manufacturing” durations, needed to make a product

NOTE 1 Often used in **process manufacturing** (2.630) and structured so that it is clear what is needed for each process on the **routing** (2.727) and what is needed to carry out that process.

NOTE 2 The “bill of manufacturing” combines the information held in the **bill of materials** (2.79) and the **routing**.

2.83

bill of resources

bill of labour

capacity bill of materials

listing of the **required capacity** (2.714) and key resources necessary to manufacture one unit of a particular **item** (2.400) or **family** (2.298) of items

cf. **capacity requirements planning** (2.126)

NOTE Often used to predict the impact of the item schedule on the overall **schedule** (2.744) and **load** (2.435) of the key resources. Rough-cut capacity planning uses these profiles to calculate the approximate capacity requirements of the **master production schedule** (2.469) and/or the **production plan** (2.651).

2.84

bin card

physical record card listing the contents of a storage bin

2.85

bin location record

record that specifically identifies the physical location where each **item** (2.400) in **stock** (2.808) is stored

2.86**blanket order**

bulk order

purchase order (2.674) which makes a long-term commitment to a vendor and against which periodic releases or **call-offs** (2.114) are generated

2.87**blanket release**

authorization to ship and/or produce against a **blanket order** (2.86)

2.88**blend formula**

bill of materials (2.79) used for a blending **operation** (2.518) when this is only part of a process and which therefore contains only some of the ingredients in the full **bill of materials**

NOTE It also takes into account any differences in the **batch** (2.66) size of the blending operation and the **work order** (2.918).

2.89**blocked stock**

stock on hold

stock (2.808) from which no deliveries may be made and/or from which no consumption may take place until further notice

cf. **quarantine** (2.682)

NOTE 1 An example of when stock may be labelled as **blocked stock** would be to allow for the necessary **inspection** (2.386) of **quality** (2.679). In the relevant registration systems this stock is given the status “blocked”, so that **transactions** (2.874) can no longer be made with it.

NOTE 2 If **blocked stock** is incoming stock it is called “quarantined stock”.

2.90**block schedule**

schedule (2.744) in which a period of time that is relatively long compared with that actually needed to carry out a particular **operation** (2.518) is allocated to each **operation**

2.91**blow through**

computing technique that enables certain marked **items** (2.400) within a **bill of materials** (2.79) to be ignored when performing **material requirements planning (MRP)** (2.474) calculations

NOTE An example of marked items would be “phantom items”.

2.92**bottleneck**

stage in a process that limits performance

cf. **constraint** (2.172)

2.93**bottom-up replanning**

using **pegging** (2.580) data to solve material and resource availability problems

NOTE 1 This is a **material requirements planning (MRP)** (2.474) process.

NOTE 2 Typical problems solved are those of material and resource availability.

NOTE 3 This process is accomplished by a planner who, with the help of the computer system, evaluates the effects of possible solutions. Potential solutions could include compressing the **lead time** (2.425), cutting the order quantity, and substituting material.

2.94**bought out item**

outsourced item

item (2.400) that is purchased from and manufactured by another enterprise

NOTE The **item** is usually designed by another enterprise in addition.

2.95

B product

product that according to an **ABC classification** (2.2) belongs to a group of products that represents the second largest part of the total value consumed or produced

2.96

branched group manufacture

technique in **Group Technology** (2.366) where a common **route** (2.725) divides to finish different members of a **family** (2.298)

2.97

break-even point

notional level of activity at which neither profit nor loss arises

NOTE This is the case when the total expenditure equals the total income.

2.98

breaking-down time

time required for a workstation to return to a standard condition after completion of an **operation** (2.518)

NOTE See Figure 9.

2.99

bucketed system

system applicable to **material requirements planning** (MRP) (2.474) where all time-phased requirements occurring in a period or “bucket” are combined into one total requirement, phased to occur at the beginning of the period

cf. **programme period** (2.663)

NOTE An example of a period or “bucket” is a week.

2.100

bucketless system

system applicable to **material requirements planning** (2.474) where each time-phased requirement is regarded as discrete and processed individually by the MRP system

2.101

budget

plan of future activities expressed in monetary terms, which provides a basis for financial control

2.102

budgetary control

method of financial control in which at intervals actual revenue and expenditure are compared to planned revenue and expenditure to enable corrective action to be taken, if necessary, or to provide a basis for revision of the plan

2.103

budget centre

section of an organization over which control of income and expenditure may be exercised and for which a **budget** (2.101) may be prepared

NOTE A **budget centre** may contain several **cost centres** (2.185).

2.104

budgeted capacity

volume and mix of **throughput** (2.858) on the basis of which financial **budgets** (2.101) are set and overhead rates are established

2.105

buffer stock

quantity of **work-in-progress** (2.914) **stock** (2.808) held between adjacent stages in the production process to decouple them, allowing variations in the **output** (2.548) rate or **working hours** (2.913)

cf. **output** (2.548), **production** (2.641)

2.106**build cycle**

time interval between major setups or cleanups in **production** (2.641)

2.107**build standard**

modification standard

version of the **bill of materials** (2.79) used to manufacture a product

2.108**bulk issue**

issue of **parts** (2.574) or material from a **store** (2.835) to a production area that is not made to fulfil a specific **work order** (2.918)

cf. **production** (2.641)

NOTE Bulk issues usually comprise small, low cost **items** (2.400) to avoid the expense of making many separate issues.

2.109**bulk material**

material which, in quantity, does not have a definitive shape and is measured by weight or volume

NOTE Examples of bulk materials include coal, oil, sand, pig iron, limestone, liquids and gases.

2.110**business process re-engineering****BPR**

systematic reviewing of the activities carried out by an enterprise to improve performance by focusing on the steps in each business process, which add value to the final customer without regard to functional areas

NOTE **BPR** aims to eliminate non-value-adding activities and reduce process costs and **cycle times** (2.206).

2.111**by-product**

product produced as a residual part of a main **manufacturing process** (2.459)

2.112**by-product bill of materials**

bill of materials (2.79) where **by-products** (2.111) appear

NOTE A **by-product bill of materials** differs little from a normal **bill of materials** except that the **by-product** unit quantity may be shown as a proportion of the **primary product** (2.621).

2.113**calendar time**

actual total time passed

NOTE 1 Adapted from APICS Dictionary [1].

NOTE 2 **Calendar time** is the time used in the definitions of **lead time** (2.425) and **scheduling rules** (2.751) and is in contrast to the meaning of **running time** (2.730).

2.114**call-off**

instruction to a supplier to deliver from a **blanket order** (2.86) a specific quantity of goods on a specific date or within a specific period

cf. **call-off method** (2.115)

NOTE 1 The call-off may also specify a time and place.

NOTE 2 An example of a specific period is a week.

2.115**call-off method**

purchasing (2.677) method where the **purchase order** (2.674) does not quote delivery dates

cf. **call-off** (2.114), **blanket order** (2.86).

NOTE The customer tells the supplier what quantities of the **item** (2.400) should be delivered in each period by issuing "call-off instructions" against the **purchase order**.

2.116

call-off schedule

schedule (2.744) showing by time period the quantity to be delivered of goods listed in a **blanket order** (2.86)

NOTE 1 A typical **call-off schedule** would show the next four weeks as firm requirements and the following eight weeks as estimates.

NOTE 2 Adapted from BS 5192-1:1993.

2.117

campaign

set of end-to-end **work orders** (2.918) that are run consecutively to avoid or reduce inter-order **set-up times** (2.766)

cf. **grouping** (2.362)

NOTE These are typically used to plan work in chemical, pharmaceutical and **Group Technology** (2.366) factories.

2.118

capable to promise

CTP

method of assessing potential product availability using calculations of numbers of **available to promise** (2.53) **items** (2.400) throughout the product's **supply chain** (2.848)

2.119

capacity

<output> rate of **output** (2.548) that a resource is capable of achieving under normal operating conditions

NOTE Capacity may be expressed in terms of hours, units, length, weight, volume, or over a period of time. For example, a manufacturing department may be said to have a capacity of 500 standard hours per week without working **overtime** (2.558).

2.120

capacity

<storage> quantity of goods that can be stored in an area

NOTE Examples of an area include a container, a **store** (2.835) and a warehouse.

2.121

capacity buying

forward buying of product delivery resources

NOTE An example of a product delivery resource is machine time.

2.122

capacity control

part of **capacity management** (2.124) that involves measuring and monitoring **capacity** (2.119) in relation to **load** (2.435) to ensure that it is sufficient to meet the **production programme** (2.652), and taking corrective action should deviations from the plan exceed acceptable limits, that is, either insufficient or surplus capacity

cf. **capacity management** (2.124)

2.123

capacity group

organizational unit in which the resources are sufficiently homogeneous to permit **capacity** (2.119) to be meaningfully measured as a single unit

NOTE Examples of **capacity groups** are a group of similar machines and a group of employees with similar skills.

2.124

capacity management

management by actions based on observations and calculations with the aim of ensuring that the people and facilities are sufficient to meet short and long term **production plans** (2.651)

cf. **capacity control** (2.122)

NOTE Capacity management involves measuring the existing **capacity** (2.119), comparing it with projected requirements, taking action, if necessary, either to increase or decrease capacity, and monitoring capacity in the short-term to ensure that it conforms to plan.

2.125**capacity requirements plan**

projected load

load profile

display of present and future **loads** (2.435) in terms of the types of resource required and the **capacity** (2.119) required, based on planned and released shop orders, and on **planned capacity** (2.597) and **available capacity** (2.49), phased over a period of time

2.126**capacity requirements planning****CRP**

capacity planning

procedure for establishing and maintaining a **capacity requirements plan** (2.125) in order to execute a **production programme** (2.652)

NOTE See Figure 3.

2.127**capacity simulation**

use of an algorithm, which reflects the behavioural characteristics of a particular plant, to examine the probable effect of a proposed product mix and volume on the utilization of that plant

NOTE The algorithm used is usually a computer program.

2.128**capital investment appraisal**

evaluation of the benefits and costs of a proposed investment in specific assets using techniques such as **discounted cash flow (DCF)** (2.237), **return on investment** (2.721) and payback

2.129**carrying cost**

stock carrying cost

cost associated with holding **stock** (2.808) of a particular **part** (2.574) or product

NOTE 1 Examples of **carrying costs** are as follows: interest on capital tied up in stock, storage space, deterioration and risk of obsolescence, administration, insurance, auditing and control.

NOTE 2 **Carrying cost** is usually expressed as a percentage of the unit cost of the **item** (2.400).

2.130**cell**

manufacturing cell

subgroup of machines

cf. **group** (2.360)

NOTE Cells are normally used together to produce a definable component or **sub-assembly** (2.839) of the product. They are usually laid out in close proximity and managed as a unit.

2.131**cell manufacturing**

method of production layout, **planning** (2.603) and **operation** (2.518) using a self-contained group of **work stations** (2.919) that in sequence process one or a **family** (2.298) of components, **sub-assemblies** (2.839) or products

cf. **Group Technology** (2.366)

2.132**central warehouse**

warehouse from which other warehouses are replenished

cf. **stock point** (2.826)

2.133**certificate of conformance**

signed document provided by a supplier to a customer which verifies that the **items** (2.400) supplied conform to the customer's specified requirements

NOTE This is usually on a standard form that accompanies a delivery of **items** (2.400).

2.134

certification

procedure by which a third party gives written assurance that a product, process or service conforms to specified requirements

NOTE Adapted from BS EN 45020.

2.135

change-over

operation (2.518) of making changes to a plant, equipment or another resource after completion of a task to make it capable of performing another task

cf. **set-up** (2.762)

2.136

change-over cost

cost incurred in a **change-over** (2.135)

cf. **set-up cost** (2.763)

NOTE These can include the following: cost of the change-over **operation** (2.518); cost of non-productive time whilst the resource is idle; administrative cost in issuing a new shop order; cost of quality checks and material wastage during the **running-in** (2.728) period.

2.137

change-over time

time required to make changes to a plant, equipment or another resource after completion of a task to make it capable of performing another task

cf. **set-up time** (2.766)

NOTE See Figure 9.

2.138

clock card

card used to record employee attendance time or time spent on a **job** (2.404) or **jobs**, on which the time and date are entered by inserting the card in a time recorder

cf. **job card** (2.405), **time card** (2.861)

2.139

closed loop material requirements planning

method of **planning** (2.603) in which **material requirements planning (MRP)** (2.474) is linked to other systems to provide **MRP feedback** (2.302) of information between the planning and executing functions

cf. **master production schedule** (2.469)

NOTE 1 A **closed loop material requirements planning** system effectively closes the information loop.

NOTE 2 **Production programmes** (2.652) are developed through the master production scheduling and **capacity requirements planning** (2.126) systems, and the programmes **input** (2.383) to the **MRP** system that generates time-phased manufacturing and buying instructions. **Purchasing** (2.677) and shop order systems feed back information about performance to the **MRP** system to enable corrective action to be taken, if necessary.

NOTE 3 Another term for closed loop system is feedback control system.

NOTE 4 Adapted from BS 5192-1:1993.

2.140

closed loop system

feedback control system

control system where the **planning** (2.603) and **feedback** (2.302) control system execution phases are linked so that information about performance compared to plan is fed back to the planning phase to enable corrective action to be taken, if necessary

cf. **feedback** (2.302)

NOTE Adapted from BS 5192-1:1993.

2.141

closing stock

amount of on-hand **stock** (2.808) at the end of a period

NOTE The closing stock is often determined by a physical **stock check** (2.811).

2.142**commodity buying**

<common materials> **procurement** (2.635) where similar materials or goods under the control of one buyer or buying section are grouped

2.143**commodity buying**

<generic materials> buying a class of goods or materials of such common occurrence that brands have little significance, and price is the dominant consideration

2.144**common component**

identifiable **part** (2.574), material or **item** (2.400) that is used to make a number of products

NOTE Examples of common items are fixings and fasteners.

2.145**common parts bill of materials**

planning bill of materials (2.604) that groups all **common components** (2.144) for a product **family** (2.298) into one **bill of materials** (2.79) structured as a **pseudo bill of materials** (2.670)

NOTE 1 This **bill of materials** can be treated as a special version of the **modular bill of materials** (2.485).

NOTE 2 Adapted from APICS Dictionary [1].

2.146**company flow analysis****CFA**

technique used to plan the simplification of the flow of material between different factories, or major divisions of a large company

NOTE This is the first level sub-technique of **production flow analysis (PFA)** (2.648)

2.147**complete-to-order**

type of manufacturing that completes or configures stocked lower-level **items** (2.400) to **sales orders** (2.739) upon receipt of such orders

NOTE Adapted from BS 5192-1:1993.

2.148**completion date**

date on which the manufacture of a product is finished, from which the **best before date** (2.78) is calculated

2.149**component availability**

presence, or absence of the constituent **parts** (2.574) required to make a product

2.150**component offset**

time by which the issue date of an individual component differs from that of the whole order

NOTE **Component offset** is used in cases where the duration of manufacturing **operations** (2.518) is relatively long and not all the components are required at the start of the process. See Figure 8.

2.151**component part**

uniquely identifiable product that is considered indivisible for a particular **planning** (2.603) or control purpose

NOTE A component for one organizational group may be the **final assembly** (2.307) of another group, e.g. an electric motor.

2.152**compound yield**

net **yield** (2.922) after losses arising from a sequence of **operations** (2.518)

2.153

computer aided design

CAD

application of computers in interactive mode for creating, drafting and storing designs

NOTE Adapted from BS 5192-1:1993.

2.154

computer aided manufacture

CAM

manufacture in which computers are used to instruct and control production plant and equipment
[BS 5192-1:1993]

2.155

computer aided process planning

CAPP

application of computers in interactive mode for the **planning** (2.603) of **manufacturing processes** (2.459) and **operations** (2.518) and for the storing of **process planning** (2.632) information

NOTE Adapted from BS 5192-1:1993.

2.156

computer integrated manufacture

CIM

manufacture where various computerized systems are linked to provide an integrated manufacturing system

NOTE 1 Degrees of integration are possible, from simple links (e.g. between **computer aided design (CAD)** (2.153) and **computer aided process planning (CAPP)** (2.155) and between **material requirements planning (MRP)** (2.474) and **computer aided manufacture (CAM)** (2.154) to a totally integrated factory.

NOTE 2 Adapted from BS 5192-1:1993.

2.157

concession

authorized deviation

waiver

permission to use or release a product that does not conform to specified requirements

NOTE A concession is generally limited to the delivery of a product that has nonconforming characteristics within specified limits for an agreed time or quantity of that product. [BS EN ISO 9000:2000]

2.158

concession note

record of a **concession** (2.157)

2.159

concurrent engineering

simultaneous engineering

technique of **time compression** (2.862) that overlaps the stages of designing, developing and launching a product

NOTE **Concurrent engineering** usually involves inter-dependent design processes being carried out simultaneously rather than sequentially.

2.160

conference room pilot

technique that refines business procedures and functions in a proposed system before it has been fully designed and constructed

2.161

configuration

totality of the functional and physical characteristics of an object or system

2.162**configuration control**

procedure for ensuring that a product conforms to a customer's specification during construction and prior to delivery

2.163**configuration function**

function for translating customer requirements into an internal specification from which a product may be built

2.164**configuration identification**

identification of the product **configuration** (2.161) of, and changes to, an approved product

2.165**configuration management**

technical and organizational activities of **configuration identification** (2.164), **engineering change control** (2.274) and **configuration status accounting** (2.166)

2.166**configuration status accounting**

formalized recording and reporting of all valid **configuration** (2.161) documents and the implementation of approved changes

NOTE It might be useful to include information on proposed changes under consideration.

2.167**configurator**

facility for translating customer requirements or desired application functions into production **modules** (2.486) and software, from which a **finished product** (2.312) has to be built up

NOTE **Configurators** are mostly used in IT systems.

2.168**configure to order**

method of selecting product **options** (2.523) and accessories to meet a customer's requirements

2.169**conformity**

fulfilment by a product, process or service of all of the requirements specified

2.170**consignment**

separately identifiable collection of one or more shipments transported or available to be transported together by one means of transport

2.171**consignment stock**

goods with an **external customer** (2.291) that are still the property of the supplier

NOTE Payment for these goods is made to the supplier only when they are sold or used by the external customer.

2.172**constraint**

element or factor that prevents a system from achieving a higher level of performance with respect to its goal

NOTE **Constraints** can be physical, such as machine speeds, or managerial, such as a policy or procedure.

2.173**consumable tools**

tools required for **production** (2.641) that have a relatively short life and which are not treated, for accounting purposes, as fixed assets or **direct materials** (2.235)

NOTE Examples of **consumable tools** include cutting tools and grinding wheels.

2.174

consumer goods

goods destined for use by the general public

2.175

consumption of forecast

process whereby a forecast is confirmed by **sales orders** (2.739), or other types of **actual demands** (2.12), as they are received

2.176

Continuous Acquisition Lifecycle Support

CALS

set of best practices for building relationships within a **supply chain** (2.848) to create, sustain, and dispose of products throughout their life

NOTE 1 This system was introduced by the US Department of Defense and rolled out to suppliers in 1993. It is fundamentally a system which manages all digital data throughout the supply chain during the design, manufacture and use of the product or system.

NOTE 2 JCALS (Joint Continuous Acquisition Lifecycle Support) is a term adopted by the US Airforce to describe an integrated system for the service incorporating three earlier versions.

2.177

continuous flow production

continuous line flow

production (2.641) where products flow continuously rather than being portioned into **lots** (2.440) or **batches** (2.66)

cf. **mass production** (2.468)

2.178

contract based manufacturing

manufacturing where all materials, activities and costs are linked to a specific contract

2.179

contract control

production planning and control for a contract

cf. **production plan** (2.650), **planning** (2.603)

2.180

contract costing

specific form of **order costing** (2.528) that is applied where work is undertaken to a customer's special requirements

NOTE Each **order** (2.524) is generally of long duration.

2.181

contribution

sales value (2.743) less the **variable cost** (2.895) of goods and sales

2.182

controlled store

store (2.835) where **receipts** (2.694) and issues and the quantities held of all **items** (2.400) are continuously recorded

NOTE All issues and receipts are required to be confirmed in accordance with a plan or authorization system.

2.183**co-product**

one of a set of parallel primary **parent items** (2.572) produced on the same **work order** (2.918) as a result of normal processing

NOTE 1 Any of these may be used as a basis for **planning** (2.603) and control.

NOTE 2 Like **by-products** (2.111), **co-products** are commonly found in process industries.

2.184**co-product bill of materials**

bill of materials (2.79) that has multiple **parent items** (2.572)

NOTE The **parent items** can be produced simultaneously or sequentially.

2.185**cost centre**

location, person, equipment or activity or a combination of one or more these for which costs may be accumulated

cf. **budget centre** (2.103)

NOTE Examples of **cost centres** include process cost centres, production cost centres and service cost centres.

2.186**costed bill of materials**

bill of materials (2.79) that gives the **quantity per** (2.681) of every component in the bill together with the cost of the component

NOTE Adapted from APICS Dictionary [1].

2.187**count point**

point in a flow of material or sequence of **operations** (2.518) where **parts** (2.574), **sub-assemblies** (2.839) or **assemblies** (2.38) are counted

NOTE **Count points** may be designated on a line or upon removal from a **work centre** (2.909), but most often they are designated as the points where material transfers from one department to another.

2.188**CNC**

computer numerically controlled machine

machine of which the **operation** (2.518) is controlled by a computer program

2.189**C product**

product that according to an **ABC classification** (2.2) belongs to a large group of products that represents only a small part of the total value consumed or produced

2.190**critical path**

sequence of **jobs** (2.404) or activities in a network analysis of a **project** (2.666) such that the total duration of the **project** is equal to the sum of the durations of individual **jobs** in the sequence

NOTE There is no time leeway or **float** (2.330) in an activity along the **critical path**, i.e. if the time to complete one or more jobs on the **critical path** increases, the total project time increases.

2.191**critical path method****CPM**

network planning (2.501) technique used for **planning** (2.603) and controlling the activities in a **project** (2.666)

cf. **project network techniques** (2.669), and **programme evaluation and review technique** (2.662)

NOTE By showing each of these activities and their associated times, the **critical path** (2.190) can be determined. The **critical path** identifies those elements that actually constrain the minimum total time for the project.

2.192

critical ratio

dispatching rule (2.241) for calculating a priority index number by dividing the remaining time to the **due date** (2.253) by the expected time needed to finish the **job** (2.404)

cf. **schedule** (2.744)

NOTE 1 For example, if the remaining time to the due date is 30 days and the expected time needed to finish the job is 40 days then the critical ratio is $30/40 = 0.75$.

NOTE 2 Typically, jobs with critical ratios of less than 1 are behind schedule, jobs with critical ratios of greater than 1 are **ahead of schedule** (2.22), and jobs with a critical ratio of 1 are on schedule.

2.193

cross-flow

flow of materials between different **groups** (2.360) at the same processing stage

2.194

cumulative lead time

summation of the **lead times** (2.425) of all the activities on a **critical path** (2.190)

NOTE See Figure 5 and Figure 10.

2.195

customer bill of materials

bill of materials (2.79) that translates a **sales order** (2.739) or **demand** (2.221) into specific master level **items** (2.400)

cf. **bill of materials** (2.79)

NOTE 1 The translation of a **sales order** or demand is mostly in terms of product functions.

NOTE 2 This **bill of materials** is used as **input** (2.383) for the **final assembly schedule** (2.310) or the shipment **planning** (2.603) when the system **configuration** (2.161) is done by the customer.

2.196

customer feature

product attribute specifically ordered by a customer

cf. **option** (2.523)

2.197

customer lead time

time between a customer placing an **order** (2.524) and receiving their delivery

NOTE See Figure 6 and Figure 10.

2.198

customer relationship management

CRM

management of all communication and contact with customers in a coherent manner

NOTE Usually, in customer relationship management, computer systems are used to provide customer related information.

2.199

customer service

actions and attitudes that assist customers in deriving added value from a product or service

2.200

customer service level

level of service

performance measure of **customer service** (2.199)

cf. **service level** (2.759), **customer service ratio** (2.201), **first fill rate** (2.319)

2.201

customer service ratio

measure of the **demand** (2.221) that is routinely satisfied by **finished goods stock** (2.311)

NOTE The **customer service ratio** is usually expressed as a percentage of **orders** (2.524) met from **stock** (2.808) and/or the percentage of demand value met from **stock**.

2.202**customer specification**

statement of what a customer requires

NOTE At **order entry** (2.530) this statement is accepted and translated into terms used by the seller.

2.203**cut-off procedure**

procedure used in **stock control** (2.812) to make sure that the number given by a stock count and the number given in the relevant **stock record** (2.830) are identical by making allowance for any **stock** (2.808) movements during the period between the stock count and the point in time to which the **stock record** relates

2.204**cycle counting**

stock audit technique where each **stock item** (2.816) is counted according to a cyclic **schedule** (2.744) cf. **stock check** (2.811)

NOTE Cycle counting is an alternative to counting all **items** (2.400) simultaneously.

2.205**cycle stock**

portion of **stock** (2.808) required to meet the normal **production** (2.641) **demand** (2.221), excluding **excess stock** (2.280) and **safety stock** (2.733)

2.206**cycle time**

floor-to-floor time

<continuous> time between successive initiations of a repetitive process

2.207**cycle time**

<discontinuous> time required to complete an **operation** (2.518) on one unit of a **batch** (2.66)

NOTE See Figure 9.

2.208**cyclic variation**

oscillations about a trend of **demand** (2.221)

NOTE The period of these cycles might be related to economic changes and conditions or seasonal factors.

2.209**data warehouse**

systematically processed and stored set of data

NOTE A data warehouse provides the data for the analysis of trends, correlations and associations by **executive information systems** (2.281).

2.210**decoupling point**

point in a **supply chain** (2.848) that provides a buffer between differing **input** (2.383) and **output** (2.548) rates

2.211**dedicated capacity**

work centre (2.909) that is designated to produce a single **item** (2.400) or a limited number of similar **items**

NOTE Adapted from APICS Dictionary [1].

2.212**dedicated equipment**

equipment of which the use is restricted to one or more specific **operations** (2.518) on a limited set of components

NOTE Adapted from APICS Dictionary [1].

2.213

dedicated factory

focused factory

factory established to produce a limited number of products and/or employ a limited number of processes

NOTE In general the products made in a **dedicated factory** will all use the same series of processes.

2.214

dedicated line

production line configured for the manufacture of a single product

2.215

de-expediting

lowering the priority of a **job** (2.404) or **order** (2.524) by setting a later **completion date** (2.148)

cf. **expediting** (2.285)

2.216

delay reporting

exception reporting of **work orders'** (2.918) **operation** (2.518) status when delays are expected

2.217

delinquent item

item (2.400) on an **open order** (2.516) that has a scheduled shipping date prior to the current date

cf. **schedule** (2.744)

2.218

delivery lead time

time between the receipt of a **sales order** (2.739) and the delivery of the product to the customer

NOTE See Figure 6.

2.219

delivery note

document recording the delivery of products to a customer

2.220

delivery schedule

vendor schedule

required and/or agreed time for, or rate of delivery of, goods or services purchased in advance

NOTE Adapted from APICS Dictionary [1].

2.221

demand

requirement for a particular product or component

NOTE Demand can come from a number of sources, both internal and external.

2.222

demand management

activities that provide a classified forecast of known and **expected demand** (2.283) and match it to **capacity** (2.119) to allow **order** (2.524) acceptance and monitor fulfilment of **orders**

2.223

demand pattern

time-based representation of **demands** (2.221)

2.224

demand pull

triggering of material movement downstream in the **supply chain** (2.848) from a **work station** (2.919) when the subsequent work station or the customer requires it

cf. **just-in-time** (2.409) and **make to order** (2.452)

NOTE The aim of **demand pull** is to minimize **work in progress** (2.914).

2.225**demand time fence****DTF**

point in time set in the **master production schedule** (2.469) after which the production programme is not changed in response to changes in **demand** (2.221) for an **item** (2.400)

NOTE 1 See Figure 10.

NOTE 2 For example the **DTF** might be set a date one month before the **completion date** (2.148) for an **item** (2.400), after which the **production programme** (2.652) for that item would be frozen and no further changes allowed.

2.226**dependent demand**

demand (2.221) for **items** (2.400) arising from the demand for other products

2.227**design change note**

record of a design change in a product

2.228**design product structure**

product structure (2.660) created by a development and/or design department

2.229**design to order**

type of manufacturing where the product is made to a **customer specification** (2.202)

2.230**despatch note**

shipping note

document recording that products are available for despatch that includes authorizing arrangements for delivery

2.231**deterministic requirements calculation**

determination of time phased requirements for quantities of components needed to satisfy **demand** (2.221), based on the **bill of materials** (2.79) of products ordered

2.232**direct cost**

prime cost

expenditure on materials, labour and services that can be directly attributed to a specific unit of product or service

2.233**direct costing**

method of calculating costs where only the **direct costs** (2.232) are allocated to a specific product or service

2.234**direct delivery**

drop shipment

delivery of goods directly from the vendor to the purchaser

NOTE This is frequently used if a third party acts as an intermediary agent between a vendor and purchaser.

2.235**direct material**

material that becomes a part of the final product in measurable quantities

NOTE Adapted from APICS Dictionary [1].

2.236**discontinuous demand**

demand (2.221) pattern in which there are periods when there is no demand

2.237

discounted cash flow

DCF

concept of relating future cash inflows and outflows over the life of a **project** (2.666) or **operation** (2.518) to a common base value using discount rates based on compound interest

NOTE 1 An example of a common base value would be the present value.

NOTE 2 Adapted from BS 3138:1992.

2.238

discrete manufacturing

manufacturing where products are manufactured in a non-continuous manner

2.239

disintermediation

removal of intermediate steps in the flow of goods and **orders** (2.524) between the physical producer and the final customer

NOTE **Disintermediation** is often achieved by the use of computer systems.

2.240

dispatching

detailed **allocation** (2.24) and subsequent control of **production** (2.641) resources to individual **work orders** (2.918)

cf. **allocation** (2.24)

NOTE See Figure 2.

2.241

dispatching rule

logic rule used to assign priorities to **jobs** (2.404) at a **work centre** (2.909)

NOTE Adapted from APICS Dictionary [1].

2.242

distribution

geographical extent of sales and volume of sales

cf. **physical distribution** (2.585)

2.243

distribution centre

branch warehouse

regional distribution centre

field warehouse

place where product shipments are co-ordinated for despatch to delivery areas or directly to customers

NOTE 1 The distribution centre is usually remote from the factory where the product was made.

NOTE 2 In the automotive industry a distribution centre is often used to serve a single customer by providing sequenced deliveries of components directly to the assembly line. These components are sometimes to the **configuration** (2.161) specified in the **call-off** (2.114) at the distribution centre.

2.244

distribution requirements planning

DRP

stock (2.808) replenishment technique in a **distribution** (2.242) system that derives **demands** (2.221) at upstream **stock points** (2.825) from the aggregate demand at the immediate downstream stock points, using **lead time offset** (2.426) and requirements **netting** (2.500)

NOTE See Figure 3.

2.245

distribution resource planning

extension of **manufacturing resource planning** (2.460) logic into the **planning** (2.603) of key resources contained in a **distribution** (2.242) system

2.246**distribution time**

period of time between the despatch date from the manufacturer and the delivery date to the customer

NOTE See Figure 4, Figure 5 and Figure 6.

2.247**double order point system**

distribution (2.242) stock management system that includes two system **order points** (2.536)

NOTE The original **order point** represents anticipated usage during the **replenishment lead time** (2.712). The second **order point** provides additional coverage to allow for the **manufacturing lead time** (2.457).

2.248**downstream operation**

task subsequent to the task currently being planned or executed

2.249**down time**

period of time when a **work station** (2.919) or resource is not available for **production** (2.641) due to a functional failure

NOTE See Figure 9.

2.250**DNC**

distributed numerical control

control of a machine by a computer using real time digital signals

2.251**drawing**

numbered reference document that depicts and specifies an **item** (2.400) to be manufactured, purchased or inspected

NOTE 1 This document may contain information such as scale or freehand pictorial representations, graphics, dimensions and **tolerances** (2.868), materials requirements, design revision history and other data defining the essential attributes of the **item**.

NOTE 2 The drawing reference number, in combination with its revision level, is unique to the specified **item** and is used to identify that **item** throughout the **production control** (2.644) system.

NOTE 3 A CAD model is often referred to as a **drawing**.

2.252**dual sourcing**

second sourcing

selecting and working with two equivalent suppliers for a certain product

cf. **multiple sourcing** (2.495)

2.253**due date**

date when purchased material or production material is due to be available for use

cf. **production** (2.641)

NOTE 1 See Figure 5 and Figure 8.

NOTE 2 Adapted from APICS Dictionary [1].

2.254**due date performance**

reliability with which a **work centre** (2.909), department or factory meets its despatch dates

2.255**due date rule**

dispatching rule (2.241) that directs the sequencing of **jobs** (2.404) by the **earliest due date** (2.260)

NOTE Adapted from APICS Dictionary [1].

2.256

dwelt time

period of time during which material is in a process

2.257

dynamic batch-sizing

process of periodically recalculating the **order** (2.524) quantities in order to adjust them for changes in requirements or other conditions

2.258

dynamic data

data that change frequently

NOTE An example of dynamic data are stock on hand.

2.259

dynamic programming

sequential decision-making where the result of the decision at each stage affords the best possible means to exploit the expected range of likely outcomes in the following decision-making stages

2.260

earliest due date

scheduling rule where the first **order** (2.524) manufactured is the order with the first calendar date that it is expected or promised to a customer

2.261

earliest start date

first date an **operation** (2.518) or **order** (2.524) can be started

2.262

economic batch quantity

EBQ

economic order quantity

EOQ

optimum batch quantity

economic lot-size

economic purchase quantity

EPQ

order (2.524) quantity that is calculated to minimize the combined costs of **purchasing** (2.677), manufacturing and holding stock

2.263

economy of scale

reduction of the unit cost of an **item** (2.400) attributable to the **distribution** (2.242) of **fixed costs** (2.322) over a larger quantity of items produced

2.264

effective date

date on which a component or **operation** (2.518) is to be added to or removed from a **bill of materials** (2.79) or an **assembly** (2.38) process

NOTE 1 Effective dates are used in **explosion** (2.286) processes to create **demands** (2.221) for the correct **items** (2.400).

NOTE 2 Normally, **bill of materials** and **routing** (2.727) systems provide for an effective “start date” and “stop date”, signifying the start or end of a particular relationship.

2.265

effectivity

method of controlling changes to a product **configuration** (2.161) by reference to the date or **batch** (2.66) or serial number from which the change is to occur

cf. **effective date** (2.264)

2.266**efficiency**

performance measure for a process or system expressed as the ratio of **output** (2.548) to **input** (2.383)

NOTE **Efficiency** is often expressed as the ratio of standard hours to actual hours worked.

2.267**efficient consumer response****ECR**

quick response

QR

set of techniques used by both manufacturers and retailers to eliminate activities which are not **value added** (2.893), whilst improving **customer service** (2.199)

NOTE **Efficient consumer response** was originally used in the food industry.

2.268**electronic business**

e-business

business transacted by electronic communication

NOTE 1 The term **electronic business** is most often used to refer to **transactions** (2.874) using the Internet.

NOTE 2 **Electronic business** is often divided into two types:

- a) Business to Business (B2B) where **orders** (2.524) and other transactions are automatically passed from the customer's computer system to the supplier's without human intervention.
- b) Business to Customer (B2C) where the customer places **orders** or makes enquiries direct onto the supplier's website, usually with a secure credit card payment.

2.269**electronic commerce**

e-commerce

commercial **transactions** (2.874) transmitted between parties by electronic means such as the Internet or **electronic data interchange** (2.270)

cf. **electronic business** (2.268)

2.270**electronic data interchange****EDI**

transfer of structured business data by an agreed message format in electronic form between computer systems in separate organizations

NOTE 1 Adapted from BS 5192-1:1993.

NOTE 2 A number of industry or area specific message standards exist including **electronic data interchange** for administration commerce and transport (EDIFACT), organization for data exchange through tele-transmission in Europe (ODETTE), trading data communications standard (TRADACOMS) and American National Standards Institution (ANSI X12).

2.271**electronic signature**

encrypted set of characters attached to an electronic message that provides authentication and non-repudiation of the message by enabling the recipient to check and record that the message was sent by the authorized person

NOTE The electronic message can also be encrypted.

2.272**engineering bill of materials**

bill of materials (2.79) containing data regarding **product design** (2.640)

2.273

engineering change

revision of the **parts list** (2.577), **bill of materials** (2.79), product definition, **routings** (2.727) or processes
cf. **modification** (2.484)

NOTE 1 This is sometimes referred to as a “supersession”.

NOTE 2 An **engineering change** is often identified by a number and classified by type and urgency.

2.274

engineering change control

procedure for **planning** (2.603) and implementing **engineering changes** (2.273) within a production programme

cf. **effectivity** (2.265)

NOTE The implementation of a change may be planned by date, **batch** (2.66) or following depletion of the old component or as soon as the new component is available.

2.275

engineering change note

ECN

engineering change order

ECO

modification order

reference document that defines an impending change to an **item** (2.400) or items and the timing of the change by date, **batch** (2.66) or serial number

2.276

engineer to order

product engineering in which detailed **product design** (2.640) is first triggered by a **sales order** (2.739)

2.277

enterprise resource planning

ERP

integrated information system for the effective **planning** (2.603) and control of all resources needed to take, make, ship and account for **sales orders** (2.739) in a manufacturing, **distribution** (2.242) or service company

cf. **manufacturing resource planning** (2.460)

NOTE 1 This is a development of **manufacturing resource planning**.

NOTE 2 See Figure 3.

2.278

European Article Number

EAN

unique code allocated by the European Article Numbering Association to identify retail products or shipments between trading parties

cf. **bar coding** (2.64)

NOTE The **European Article Number** is usually represented as a bar code.

2.279

exception report

report generated by a computer or manual system that details only events that are outside or inside the set criteria

NOTE Examples of these include late **orders** (2.524), **excess stock** (2.280) and **shortages** (2.772).

2.280

excess stock

portion of stock on hand which is above the stock level target

cf. **stock** (2.808), **actual stock** (2.13)

2.281**executive information system****EIS**

user programmable software system that analyses, summarizes and presents enterprise information either from on line operational databases or off-line **data warehouses** (2.209) in a manner that makes trends and events clearly visible

NOTE EIS also enables the user to “drill down” from the summary information to succeeding levels of detail on-line.

2.282**expected completion quantity**

planned quantity of a **work order** (2.918) after expected **scrap** (2.752) or **yield** (2.922) loss

2.283**expected demand**

quantity expected to be consumed during a given time period when usage is at the forecast rate

NOTE Adapted from APICS Dictionary [1].

2.284**expediter**

progress chaser

official entrusted with **expediting** (2.285) and **de-expediting** (2.215)

2.285**expediting**

progress chasing

searching out and correcting conditions that account for discrepancies between planned and actual performance

2.286**explosion**

requirements explosion

breakdown of a **bill of materials** (2.79) into the total of each of the components required to manufacture a given quantity of a higher **assembly** (2.38) or **sub-assembly** (2.839)

NOTE Adapted from BS 5192-1:1993.

cf. **implosion** (2.373)

2.287**exponential smoothing**

weighted moving average forecasting technique in which past observations are exponentially discounted according to their age

NOTE 1 The heaviest weight is assigned to the most recent data. The **smoothing** (2.788) is termed “exponential” because data points are weighted in accordance with an exponential function of their age. The technique makes use of a smoothing constant to apply to the difference between the most recent forecast and the actual sales data such that the need to carry historical sales data is avoided. The approach can be used for data that exhibit no trend or seasonal patterns or for data with trend or seasonality or both.

NOTE 2 Adapted from APICS Dictionary [1].

2.288**exposure**

time when a system risks **stock-out** (2.823)

NOTE The number of **exposures** per year is deduced by dividing the **batch quantity** (2.73) into the annual usage.

2.289**ex-stock**

item (2.400) available on **demand** (2.221) from **stock** (2.808)

2.290**extended enterprise**

enterprise in which several proprietors pool their resources to achieve a shared business goal

2.291

external customer

customer not belonging to the organization supplying a particular product

2.292

external set-up time

duration of set-up **operations** (2.518) that can be performed only when the machine is running

2.293

external transport

transport of goods outside the limits of an operational unit

2.294

extrinsic forecast

forecast based on factors not directly connected with a particular company

NOTE Examples of such factors include information derived from market research and economic indicators.

2.295

fabrication

manufacturing **operations** (2.518) for making components for later **assembly** (2.39)

2.296

factory flow analysis

FFA

technique used to plan the simplification of the flow of material between the divisions and departments of a large company

NOTE This is a second level sub-technique of **production flow analysis (PFA)** (2.648)

2.297

factory stock

total **stock** (2.808) of materials, components and **work in progress** (2.914) in a factory

NOTE **Factory stock** does not include **finished products** (2.312).

2.298

family

product family

product group

number of products with one or more common characteristics that make it convenient to combine them for **planning** (2.603) and control purposes

2.299

family bill of materials

planning bill of materials (2.604) for a particular **family** (2.298)

2.300

fast mover

product delivered or used in **production** (2.641) with a high frequency or in high volumes

cf. **A product** (2.35)

2.301

fast moving consumer goods

FMCG

consumer goods (2.174) subject to rapid **stock turnover** (2.832)

2.302

feedback

<automated> function in an automatic control system in which information originating in the process is analysed and used as a basis for corrective signals to be sent to the process control mechanism

2.303**feedback**

<manual> information sent back to the planner on how well a plan has been executed

cf. **closed loop system** (2.140)

NOTE 1 As a result of this **feedback**, adjustments may be made.

NOTE 2 The provision of feedback distinguishes **manufacturing resource planning** (2.460) from **material requirements planning** (2.474).

2.304**feedstock**

primary **raw material** (2.691) in a chemical or refining process

NOTE 1 **Feedstock** is normally received by pipeline or large scale bulk shipments.

NOTE 2 Adapted from APICS Dictionary [1].

2.305**fill-in order**

work order (2.918), that can be carried out in periods when the **available capacity** (2.49) is not being used, or not being fully used, for normal **orders** (2.524)

2.306**filter**

dampener

user **input** (2.383) parameter to suppress or limit the reporting of unimportant action messages generated by **material requirements planning** (2.474) or other systems

2.307**final assembly**

<item> **assembly** (2.38) to which no further **parts** (2.574) need be added

2.308**final assembly**

<stage of production> activity of assembling a product

2.309**final assembly bill of materials**

bill of materials (2.79) for the **final assembly schedules** (2.310) for **sales orders** (2.739), warehouse orders, interplant orders or a combination of these

2.310**final assembly schedule****FAS**

finishing schedule

schedule (2.744) of the **operations** (2.518) and **parts** (2.574) required to complete a product for a customer in an **assemble to order** (2.37) environment

NOTE A **final assembly schedule** is sometimes called a finishing schedule because it can include other **operations** besides **assembly** (2.39) such as **picking** (2.588) and packing.

2.311**finished goods stock**

finished parts stock

finished products stock

end products stock

end items stock

stock (2.808) that is available for supply to external consumers, including **items** (2.400) that have been supplied but not invoiced, but excluding **items** that have been invoiced

NOTE A product that may be both **intermediate stock** (2.391) and **finished goods stock** is considered as **intermediate stock** until such time as a quantity of stock is physically reserved for external consumption. The quantity reserved then becomes **finished goods stock**.

2.312

finished product

end item

end product

product

completed **item** (2.400) produced by an enterprise for sale to a customer

NOTE A **finished product** is the highest level (level 0) in a **bill of materials** (2.79).

2.313

finished stock programme

schedule (2.744) of the **finished products** (2.312) planned to be held in **stock** (2.808) at the end of each period

2.314

finishing lead time

time that is necessary to finish manufacturing a product after receipt of a **sales order** (2.739)

NOTE 1 The **finishing lead time** is also the time allowed for the **final assembly schedule** (2.310)

NOTE 2 See Figure 7.

2.315

finite capacity modelling

planning system which relates forecast **demand** (2.221) to **available capacity** (2.49) and rebalances the production schedule

2.316

finite capacity scheduling

finite capacity planning

scheduling products and components or the usage of plants and equipment or both to never exceed **capacity** (2.119) limits in a given period

cf. **schedule** (2.744), **schedule** (2.745)

NOTE 1 **Finite capacity scheduling** is based upon **work orders** (2.918) or rates of use.

NOTE 2 **Finite capacity scheduling** usually operates by **forward scheduling** (2.341) and in some cases includes schedule optimization methods.

2.317

finite loading

method of sequencing and timing the release of **work orders** (2.918) so that the **capacity** (2.119) of a **work centre** (2.909) is not exceeded

NOTE For practical use, the term **finite loading** means putting no more work into a **work centre** than the **work centre** can be expected to execute.

2.318

firm planned order

FPO

planned order (2.600) that is fixed in quantity and time

NOTE In an **MRP** (2.474) system an FPO has been removed from computer control and forms the basis of most **master production schedules** (2.469).

2.319

first fill rate

fill rate

order fill rate

proportion of lines in an **order** (2.524) or group of orders that can be delivered when required

cf. **customer service ratio** (2.201), **customer service level** (2.200)