



PSLX Engineering Specification

PSLX Common Dictionary

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Recommendation

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1. Introduction

1.1. Purpose of This Specification

This specification provides the common standard dictionary to standardize terms through all the parts of Part 1 to 4 and Guidance of PSLX Engineering Specification, and to help readers to understand the meaning of each part of the specification. In this part, only the representative and important terms in PSLX Engineering Specification are selected and the meanings are explained in brief.

The terms defined in this specification are used in the form agreed in PSLX Engineering Specification. But the usage of term isn't always the same as the usage in the industry or individual enterprises. The usage of terms in this specification doesn't intend to change the terms that are actually used in the production fields. The purpose of this specification is to clarify the meanings of terms in PSLX Engineering Specification.

1.2. Intended Readers

The intended readers of PSLX Engineering Specification are as follows.

Managers in charge of IT of manufacturing enterprise, Engineering staffs at IT section of manufacturing enterprises, consultants in IT strategy of manufacturing enterprises, Consultants in production control, Managers of SI enterprises, Engineering staffs of SI enterprises, Managers of software package vendors, Engineering staffs of software package vendors, Students in manufacturing management

1.3. Structure of Specification

This specification is easy to use for confirming meanings of terms as a reference book if needed. Chapter 2 lists all terms defined in PSLX Common Dictionary in each category. Chapter 3 shows the definition of each term in alphabetical order. Appendix shows the

list that indicates where each term is used in PSLX Engineering Specification.

2. Terms Classification

2.1. IT Terms

✧ Object-oriented terms

agent, use case, business protocol, domain object, layer, business component, interface, class, object, subclass, number of concurrents, generalizing, role, intensive, master information, instance information, permanent

✧ Information technology terms (general)

XML, ontology, COM / DCOM, CORBA, ebXML, EDI, SQL, RGB, SOAP, Web service, Gantt chart

✧ Information technology terms (communication)

synchronous message, asynchronous message, request message, response message, receipt message, exception message, client, server, synchronous communication, asynchronous communication, HTTP, SMTP

2.2. General management control

✧ Management control concept terms

MRP, MES, speculative production, build-to-order production, 3PL, CPFR, VMI, BTO

✧ Management control system terms

management strategy, management resource, management environment, grand design, business model, supply chain, demand chain, engineering chain, business architecture, business process, product life cycle, engineering architecture, business package, legacy system

✧ **APS business terms**

PSLX, APS, APS agent, APS collaboration, planning, scheduling, plan, schedule

✧ **APS system terms**

Booking-type production system, Collaborative option decision system, Mixed production and order allocation system, Multi-site federation planning, Project-oriented batch production

2.3. Management indicator

✧ **Management account terms**

indicator, manufacturing cost, cash flow, cash to cash cycle, through-put, machine usage rate, standard data, product family, ratio of common parts, dead stock

✧ **SCM terms**

immediate shipping rate, sold out rate, on-time delivery rate, supply lead time, time to spare for due date, precision of unofficial order, responsible days of reception, average number of inventory days, precision of planning results, purchase balancing rate, load balancing rate, planning cycle

2.4. Business Models

✧ **Plan business terms**

policy management, production order plan, manufacturing order scheduling, logistics planning, cash flow management, transportation schedule, maintenance instruction, resource planning, stock plan, load plan, capacity plan, sales plan, purchase plan

✧ **Management business terms**

order management, shipping management, purchase order management, material reception management, quality control, cost control, supply chain (SC) management, transportation management, pegging control

❖ **Individual function**

service and support management, research and development, production preparation, product design, process design, capacity control, stock control, manufacturing execution, facilities maintenance, supplier management, supply and demand control

2.5. Individual business content

❖ **Supply chain terms**

inquiry, estimation, inventory inquiry, available to promise, due-date estimation, due-date promising, shipping notification, receipt notification, shipping schedule, release instruction, outsourcing

❖ **Process management terms**

progress, manufacturing progress, production progress, completion progress, operation progress, inspection progress, facility abnormality, quality alarm, progress abnormality, production instruction, manufacturing schedule, maintenance schedule, maintenance request

❖ **Order management terms**

production order, definite order, unofficial order, urgent order, product order, forecast order, customer order, process order, outsourcing order, purchase order, transportation order, operation order, item order, resource order

2.6. APS system terms

✧ Order management terms

party, customer, supplier, order, order release, order due time, production seat, capacity production seat modification, capacity production seat creation, capacity production seat reservation, planned order allocation, time bucket, pegging, single pegging, full pegging

✧ Engineering management terms

specification modification, option data decision request, design change, model change, latest option decision date, complaint, process specification, manufacturing person hour, BOM, manufacturing BOM, sales BOM

2.7. APS Modeling Terms

✧ Terms for modeling production

item, substance, product, material, work in process, intermediate product, product, product inventory, material stock, supplies

✧ Production resource terms

resource, alternative resource, equipment, tool, labor, shop, site, calendar, operation calendar, shift pattern

✧ Production process terms

operation, design, production, sales, purchase, transportation, manufacturing, storage, inspection, maintenance, setup, event, occurrence, permanent

✧ Manufacturing execution terms

lot, task, produced lot, consumed lot, tracking, lot tracking, produce, consume, assign, capacity, load, stock, location

✧ **Scheduling constraint terms**

precedence, predecessor, successor, interval, changeover,
production rule, lot size, task size

3. Terms

3.1. A

agent

each independent unit when subsystems making the whole system are regarded as a thing to realize each mission independently. Each agent realizes the functions defined on the interface. However, the agent may ask for help of other if necessary, and the method of realizing is concealed inside.

alternative resource

When the resource required for executing one operation can be selected out of some candidates, one resource is an alternative resource of the other resource in the candidate resources.

APS

system to integrate decision-making elements of organization such as planning or scheduling and to orient the whole optimization independently with synchronizing by each section over the boundary between organizations or enterprises.

APS agent

autonomous structural element to realize APS; subsystem for the whole APS, however include human's decision-making and uncontrollable reality inside; request through the interface defined beforehand.

APS collaboration

system that some different agents on the step communicate with each other according to circumstances in order to realize the peculiar business process for APS.

assign

relation between resource and operation when using the resource required for executing operation. The load of used resource increases during operation and returns to the former state at end time.

asynchronous communication

method that a client sends a request to a server and moves to the next processing without waiting for a response. A response is received by operating an event. This method is efficient, but on the other hand the process flow is hard to be seen.

asynchronous message

message for asynchronous communication (see to asynchronous communication)

available to promise

to answer the due date when the due date of content already ordered from a customer is inquired by the customer. The closer the date is to the due date, the higher the precision is improved.

average number of inventory days

indicate how long the finished product stock or the stock of work in process can be kept as the average number of orders per day; often used as an indicator instead of the real number of inventories; doesn't fit for the case where the number of orders varies widely.

3.2. B

Bill of Manufacturing

BOM information added with the original information by the manufacturing section besides BOM created by the design section. Product structure information and process procedure information are unified. The content of design data may be modified from the viewpoint of manufacturing possibility.

BOM

parts list; include summary parts list lining up parts and materials required for a product in one layer, and structure-type parts list making layers according to product structure.

Booking-type production system

system to realize the integrated manufacturing and sales by using the production limit information like a production seat list as a medium of information transmission between the sales section and the manufacturing section.

The proper due date can be promised and a production load can be balanced.

BTO

production control method that products are produced in unit beforehand by forecasting and finished at the point when a customer order is received; suitable for the product of which variety is decided at the end of process.

build-to-order production

system to start production after receiving an order from a customer as a production management form. The amount of finished product stock or stock of work in process can be reduced but supply lead time becomes longer for the reduction.

business architecture

business style as a premise for deciding a business model of each enterprise; made mainly from factors like product structure, market structure and production process structure.

business component

unit placed on the outside from the view of APS and with a definite business meaning, for example, customer, supplier, design and fabrication.

business model

form for an enterprise to do business and develop; defined according to relations with customer and supplier, with management resource as core competence and with various management

environments such as a competition company, centering management strategy.

business package software software

for applying the software system of which function is standardized beforehand, not order-made, for each business of enterprise. In an integrated business package, all businesses are packaged.

business process

chain of business activities. Business elements are connected as a means to realize a business model. Business model is regarded as an information flow or a value flow.

business protocol

rule for some organizations or enterprises cooperate with each other to execute business process; prescribe the pattern to exchange information, definitions of information items and meanings and way to execute process.

3.3. C

calendar

show the schedule for a factory or a shop to work in each day or each shift for a short or middle period; sometimes specified in a unit of equipment or workers, if needed.

capacity

information about the maximum and minimum of stock value specified in every item and load value specified in every resource. The values of stock and load must be within the specified range. This is time series information.

capacity control

control production capacity required for realizing production policy; select the best way out of various choices, for example building up equipment, extending operation time or using outside production resources.

capacity plan

Capacity of production resources such as equipment or worker is controlled based on the forecasted production order; change operation time in a short term and increase or decrease the number of workers or equipment capacity in a long term.

capacity production seat creation

beforehand to calculate and create seats in every produced item with the capacity of production field, the required material and forecasting in booking-type production system.

capacity production seat modification

In booking-type production seat system, when the created seat doesn't meet customer's needs, the structure of seats are modified if needed. This modification is executed when the seat of reserved item doesn't exist.

capacity production seat reservation

to reserve a seat as a production frame in booking-type production system; make the maximum use of Web system; can be corrected and canceled if the period till the due date is longer than the fixed period.

cash flow

indicator to show how much cash actually moves apart from the increase of financial assets such as specifying the value added by production. Even if good products are made, the cash flow indicates zero when the products aren't sold.

cash flow management

plan and manage cost in order to guarantee that the result of producing products firmly leads to profit; especially take production activities from the viewpoint that how profit is gained, not viewpoint of cost and make decision.

cash to cash cycle

average number of days from the day to pay cash for purchasing materials to the day to collect money by sales. When releasing new products, the period from investing in equipment to collecting the amount of investment is a big cycle.

changeover

interval between serial two operations on the same resource. It often happens that changeover time is different according to a combination of

specifications of serial operations.

Constraint is specified in every resource and every combination of operations.

class

Individual existing object is expressed and abstracted based on the feature; term for object-oriented modeling.

client

system on the side receiving service when two programs can be communicated with each other on the network and one side can provide any service to the other.

Collaborative option decision system

system to advance option decision and production simultaneously before deciding the option completely in individual build-to-order production. The production side can request option decision to the sales section or the design section.

complaint

information sent to APS from a customer when any fault occurs after the customer receives a product. This is valuable information to improve the quality of product for the design section and the manufacturing section.

completion progress

information about whether the manufacturing schedule to a production field is completed.

The progress may be reported whenever producing and in every specified period.

COM / DCOM

communication system between programs provided by MicroSoft Network; manage each execution unit of programs as an object and can easily realize the communication between them; can be executed only on Windows.

consume

information on the relation between operation or event and item; show the relation between operation or event and item when the existing items are consumed by operation or event and so the quantity of items reduces. In the case of operation, the stock value of operated item decreases at start time of operation in general.

consumed lot

lot consumed by production instruction; correspond to a produced lot by lot tracking.

CORBA

specification decided by OMG; decide the ways of defining and implementing interface to exchange messages between objects constructing a system. Its feature is that this specification doesn't depend on platform.

cost control

provide the basic information to decide the best way to produce products from the viewpoint of

cash flow with understanding each manufacturing cost in each production activity.

CPFR

system to share forecasting or sales plan information of distribution enterprise and production plan information or supply plan information of maker by using IT technology and improve the precision of mutual data.

customer

subject to issue an order to APS from the outside. A company provides the values to a customer and gets the profits in return. It is important to get the latent demand of customer in the form other than order.

customer order

express the demand from a customer as an order. The orders that cannot be handled with product inventory in customer orders are sent to the manufacturing section; include an unofficial order from a customer.

3.4. D

dead stock

product inventory, material stock and stock of work in process for the product that has already stopped to be sold. However spare parts are excluded. If the spare parts are not sold and exist as stock for the fixed period and more, they are sometimes regarded as dead stock.

definite order

decided order in customer orders. An unofficial order may change to a definite order and a definite order may be newly specified besides an unofficial order. This order is valid unless it is canceled.

demand chain

situation where the request of last customer flows in the opposite direction of product flow with changing form on each step; the opposite side of supply chain.

design

operation executed by the design section in the whole enterprise; beforehand define the master information about product structure or way of producing in a format such as an item, an operation or a production rule.

design change

to modify the design information specified by the design section. The products different from the former products are produced later. It is necessary to make good use of ordered and produced parts.

domain object

group of objects specialized for some specified problem area; however include the information about class configuration of the domain objects.

due-date estimation

to answer the due date when accepting an order temporarily before the order is fixed.

Scheduling may be redone after allocating the order to forecast order or creating a new order.

due-date promising

declare that the due date is kept when answering the due date. When guaranteeing the due date, the order cannot be moved back by scheduling later.

3.5. E

ebXML

XML specification concerned with Electronic Commerce decided by OASIS and the United Nations UN/CEFACT. The method of retrieving a business partner and the method of messaging with high reliability are decided.

EDI

electronic data exchange; exchanging order and sales information electronically between different enterprises. Up to now, data exchange has been executed on exclusive circuit but nowadays shifts to open EDI using Internet.

engineering architecture

The engineering required for achieving some goal is constructed and arranged based on the category and the dependence relation between technologies. This is a map for using the necessary engineering.

engineering chain

state where specification information or constraint information links between various departments as a chain in process of forming customer's latent demand or idea into a real product.

equipment

resource required for operating; resource expressing the specific machine for assignment; include production equipment, storage equipment, transportation equipment, inspection equipment and so on according to operation.

event

action to make any change to various realities in the production field. Only one of execution points can be defined on time axis. Operation start and end are also one kind of event, however there are events independent from operation.

exception message

message to notify the application sending a message that the application receiving a request message or an response message cannot continue processing because the content has inconvenience.

3.6. F

fabrication

operation to produce a new item by consuming,

processing and assembling some item in the operations related with production. The item for fabrication has the completely different quality before and after operating.

facilities maintenance

forecast a trouble and a fault in advance as much as possible and execute inspection and repair in order that resources for producing in a factory such as production equipment and tools are always in the best condition

facility abnormality

information to show that equipment condition is abnormal; notified to the necessary sections as the alarm information; one form of equipment operation progress.

forecast order

order issued in APS with forecasting orders that will be received from a customer in the future. Forecast order is allocated to customer order after being product inventory or left as it is.

full pegging

pegging each process order with an product order by using pegging information expressing the relation between some orders; examine that which customer order corresponds to each process order in the production field.

3.7. G • H

Gantt chart

chart expressing the visual schedule information by arranging the information on the time-axis. Usually a horizontal line indicates date or time and a vertical line indicates resource, order or item.

generalizing

abstract some class and make it an upper class; opposite meaning of materializing; term for object-oriented modeling.

grand design

define the concrete course toward the ideal form of enterprise after the enterprise rightly recognizes its environment and have a new understanding of its management resources.

HTTP

communication method to access to the data on the WWW site on Internet and take out the content. Its feature is that this method includes request and response. The detailed request content can be specified with request, if necessary.

3.8. I

immediate shipping rate

rate of immediately shipping products to an order without completely waiting for a customer; rate of the products in the condition where the products can be shipped because of having the

product inventory. Immediate shipping rate is different according to the state of sales.

indicator

business indicator that must be considered for manufacturing enterprise to decide the grand design; can be arranged from the viewpoints of customer, supplier, efficient usage of management resource and information system.

inquiry

action to inquire the basic information such as product option and price before receiving an order. Generally after inquiring, an official estimation and ordering are executed step by step. Inquiry is often executed in free form.

inspection

operation that ID of the produced item doesn't change but the number of products decreases by excluding the products that don't come up to the required quality in operations related with production. It is unknown how many products actually reduce.

inspection progress

information to show whether the produced product meets the required quality. The rejected products by inspection are disposed of or reproduced.

instance information

individually created adding the original information by using the object defined as

master information, or class information as a mold in order to express each different object.

intensive

Some objects gather together and make a part of another object. A word for object-oriented modeling

interface

reception required for exchanging data between multiple subsystems or reception form. The different subsystems can link with each other by standardizing interfaces.

intermediate product

item that is usually not for an order from a customer but for a speculative order; unit products manufactured based on forecasting before receiving an order from a customer.

interval

time relation between two operations through an item. Generally the item produced by predecessor is consumed by successor. Therefore a series of two operations is connected to an item in interval.

inventory inquiry

inquire the number of inventories that can be shipped instead of inquiring the product due date; used for knowing whether a product is standardized and can be supplied immediately.

item

mean the item produced or consumed by operations. Product, parts, material, raw material, work in process can be expressed as an item. Item has the sum of stock in time series.

item order

order to request the specific item. The operation to produce an item is selected and executed. Production order corresponds to this order. This is the structural classification of order.

3.9. L

latest option decision date

show the latest date for option decision by the constraint on the manufacturing side when advancing the option decision process and manufacturing process at the same time as for an individually ordered product.

layer

each layer when arranging and classifying various knowledge and information according to the dependence relation. Each element in each layer depends only on the lower layer at all times.

legacy system

information system that already exists in the enterprise and operates; include know-how of

various businesses as assets, on the other hand, may be a load for constructing a new IT system.

load

amount of the resources used in every date and time; one of condition values of resource and also the sum of tasks to the resource; must be within the range of capacity.

load balancing

show whether the loads of process that is typical of the shop such as bottle-neck process are balanced in a calculation unit of day or week, and whether the loads of each equipment and worker are balanced as occasion demands.

load plan

total value of loads for the future specific period that is forecasted when each operation is executed under the production plan; include an unlimited load pile method ignoring the actual process capacity and a limited load pile method considering the capacity.

location

address information of place where individual substance as item instance information exists; time series information because it changes with time and is changed by movement.

logistics planning

create a plan to supply the required materials in order to release them into process without running out of them including supplier

management and secure an outsourcing factory instead of a process in a company.

lot

identification information indicating group of produced items and consumed items when some item is concretely produced or consumed by production instruction. Stock can be calculated by adding up each lot in every date.

lot size

size of lot actually produced or consumed by individual operations; constraint information about the lot size produced or consumed. The constraint information includes the minimum lot size, the maximum lot size, unit lot size and so on.

lot tracking

See "tracking".

3.10. M • N

machine usage rate

rate of the actual operation time to the operational time in each machine or facility. The total time on operation calendar is available for the operational time zone except the equipment that is planned to stop beforehand.

maintenance

regular or irregular operation for resource; not

create an item differing from usual operations. The state of resource is modified by maintenance and so the resource operates normally.

maintenance instruction

information in which maintenance operations like equipment inspection and repair are beforehand specified in order to keep production processes in the best condition. The relation with operations for production must be considered.

maintenance request

The production field requests APS not to use equipment for producing for the specific period because of maintenance. Even if the production field executes maintenance independently, the maintenance must be adjusted to the entire production schedule.

maintenance schedule

production instruction for maintaining equipment and process not concerned with manufacturing; independently created and executed in the field when maintenance is independently executed in the production field.

management environment

outside factor that cannot be controlled directly for managing. Management environment changes with time and is uncertain. Commercial habit, rules and competition companies are the important elements besides the trends of needs and seeds.

management resource

workers, objects, money, information and so on required for a company to execute activities. Especially the technology and the network of enterprise are intangible assets constructed based on these resources.

management strategy

measure to develop an enterprise permanently; decide distribution of management resource selectively; lead to the total optimization by linking the short, middle and long-term goals specified with grand design.

manufacturing cost

cost required for manufacturing products; usually consist of the fluctuating cost like material costs or labor costs and the fixed cost like collection cost of equipment investment. Distribution of the fixed costs becomes a big problem.

manufacturing execution

actually execute manufacturing according to plan or scheduling result. The more detailed procedures are independently decided. The way of manufacturing may be changed for the unexpected event in the production field as occasion demands.

manufacturing order scheduling

scheduling that production order is developed in each production process and process order is

specified to the required operation and that specifies the allocation of resource and the date required for each operation and enable the order to be executed.

manufacturing person hour

information to indicate how much equipment is occupied in the main process required for producing products. Unit is time. Person hours are different in every product, process and according to a type of the used equipment.

manufacturing progress

progress information including production progress information about how many products are actually produced and operation progress information about how many resources are used under manufacturing schedule.

manufacturing schedule

information to instruct each production resource to actually execute production; include the information about start time and end time of operation; directly concern with production in production instructions.

master information

The part that is common and permanent in the data about various objects is arranged as a class. This information is a mold for creating individual different information.

material

bought from a supplier in constituent element items required for finishing a product.

Material is often a general-purpose product and a maker doesn't design a material.

material reception management

The materials ordered to a supplier are actually received, inspected and accepted in a production field when the materials are delivered and progress information is registered. When the actual condition differs from a plan, supplementary supplies may be requested.

material stock

material stock information required for producing a product; stored in a material storehouse until production starts after purchasing materials from suppliers; become the stock of work in process from releasing a product until finishing the product and so it is difficult to grasp this stock.

MES

manufacturing execution system; system to solve various realistic problems for executing production schedule and feed back a result. Its purpose is to fill a gap between plan and reality.

mixed production and order allocation system

system to treat speculative production and order production without distinction and always allocate a customer order to production schedule; treat stock as finished schedule, not stock. Supply lead time and stock reduction can be executed at the same time.

model change

Refer to design change

MRP

material requirement plan; calculate the required quantity of materials based on BOM information by the number of finished products. The required date is generally calculated in a unit of time bucket using the fixed lead time.

multi-site federation planning

system dynamically to link business processes in each site by showing plan information by APS separated in each site and by keeping the entire adaptability.

number of concurrents

data to show what numerical relation between objects belonging to each class is in two classes that have any relation.

3.11. O

object

expressed on a model as a unit of attributes and procedures indicating the features of various subjects individually existing; word for object-oriented modeling.

occurrence

instance information of event. The concrete

execution date of event is specified besides the event information. All schedule data consist of occurrences.

on-time delivery rate

rate that a product can be shipped at the due date promised to a customer when accepting an order. Even if the due date is changed as occasion demands, it can be called on-time delivery that a product can be supplied at the due date.

ontology

vocabulary that is the final basis for expressing various meanings. The common consent to the used ontology is needed to tell meaning to a party.

operation

unit to indicate the content of action about production; master information for scheduling; can specify producing and consuming an item or using resources. There is the operation to produce no items.

operation calendar

See calendar

operation order

order to request operation execution. Process order corresponds to this order. The operation to be executed is directly specified. It is not necessary that the operation produces an item. This order is structural classification of order.

operation progress

progress information on the equipment side for manufacturing schedule to a manufacturing field; show how the equipment is operated as a result of instructed production. There are many cases where this progress is unified in the specific period.

option data decision request

press a customer for option data decision at the needed timing with adjusting to production progress when a customer original option is reflected to a product in individual order production.

order

materialize a request; trigger to produce production instruction or occurrence; need a schedule meeting the order content; may be produced by planning or scheduling other than a customer.

order due date

the latest date in the dates to complete all process orders caused by the order such as product shipping. Order due date is an event and so date and precedence can be specified like other events.

order management

manage various processes from inquiry to order and payment as an actual business with a customer; handle an urgent order, answer due date

and moreover support individual option data decision standing between a customer and a production field.

outsourcing

to commission the outside suppliers to execute a part of production process from materials to a product. When the middle production process is commissioned, the work in process at that time must be supplied to a supplier.

outsourcing

order to the outside supplier in supply orders. This order is different from purchase order and used to operate production such as processing or assembling with the outside resources.

3.12. P

party

user and person concerned who are placed on the outside from viewpoint of manufacturing APS such as a customer and a supplier. Party requests APS to realize any function.

pegging

information expressing the relation between some orders; used for examining which product order is finally allocated to each process order in the production field. The correspondence relation may branch off and join.

pegging control

control the correspondences between a customer order and a production order or between a production order and an individual production instruction; control pegging; correspond to the cases from a simple case like product number method to the case where lot is divided and joined.

permanent

make an object unchangeable by saving the object in a database; term for object-oriented modeling.

permanent

event that doesn't belong to the specific operation or order in events; used when only event independently exists without operation such as a serial process.

plan

concrete numerical information to lead management strategy to actual company activities; specified as a planning result; become a goal or constraint to scheduling such as the calculated amount of orders.

planned order allocation

allocate the definite customer order to forecast order in the condition of plan or process, not to the finished product inventory when the definite customer order is allocated to

speculative production; has an effect on reducing inventories.

planning cycle

cycle to create a plan or schedule. The plan and schedule created once are repeatedly updated by the feedback of progress from the trend of actual production field and market.

planning cycle

problem to specify a goal and measures in order to fill the gap between a demand and reality and decide its structure and parameter; to put it concretely, decide the constraint of scheduling by specifying an order or production capacity.

policy management

information gained as the result of decision-making about how efficiently the management resource is distributed from the view of company management. All items such as design, fabrication and sales are for decision-making.

precedence

time relation between two events, for example "Event A must occur after Event B." The constraint content is expressed with an interval between two events and comparative signs (< , > , = etc.)

precision of planning results

indicator to confirm whether the created schedule is actually executed as scheduled in the process to a production field. The value

becomes bad if the specified content doesn't recognize the reality rightly or that the reality changes.

precision of unofficial order

rate of actual order to unofficial order notified to a supplier beforehand. Difference between person hours base, quantity base or cost base comes into question. There are many cases where precision of unofficial order is guaranteed beforehand.

predecessor

constraint that the personal operation cannot start after the specified operation finishes in the interval between two operations; can be defined for the interval between events or between operation and events.

process design

design hardware and software such as manufacturing equipment and workers required for manufacturing products; design the system on the production side according to a concrete request.

process order

order issued for every operation related with production. One production instruction is specified by process order. Usually process order is dynamically specified in planning or scheduling.

process specification

engineering information required for

establishing a new process, improving for a new product or maintaining facilities. This content is specified by the design section and sent to the production field with plan information.

produce

information about the relation between operation or event and item; show the relation in the case where a new item which hasn't existed until then is produced by operation or event. In operation, the stock value of produced items generally increases when finishing the operation.

produced lot

lot produced by a production instruction; correspond to the consumed lot by lot tracking.

product design

decide product functions and the way to realize customer's needs by specifying the needs; to put it concretely, decide the structure and the manufacturing method of product and define the master information such as a drawing and a parts list.

product family

products belonging to the same group when classifying different products according to configuration. Many of common parts are used and so a part of optional products is often different.

product inventory

has the time series values of the future theoretical value besides the present value about on what point and how much stock exists in each product; include the stock information outside enterprise such as distribution stock.

product life cycle

a series of processes that one product is planned, designed and actually produced for the specific period, used by a consumer, and then doesn't sell well and finally stops to be manufactured and then disappears from a market.

product order

order to be issued in every product; include the information about quantity, due date, other option specifications; include a customer order issued by a customer and a forecast order issued in planning.

production

operation executed by the manufacturing section in the whole enterprise; include fabrication, transportation, storage, inspection, setup and maintenance to deal with various items and resources concretely.

production instruction

specify and indicate produced items, resources and date information based on the defined operation information in order that the concrete

instruction can be executed for an individual order.

production order

order in every last production and information that what, when and how many products are concretely produced; a request to the production section; generally correspond to the product orders that the sum of stock allocation is subtracted.

production order planning

calculate the number of production orders to be actually produced by specifying a product order such as a customer order or a forecast order with considering a balance of supply and demand in the future.

production policy

basic policy about what, when and how many products are produced; discuss a product family, not individual products and is a grain size for unit of site or work shop of resource.

production preparation

complete various equipment and production lines including trial manufacture in order that products are actually produced by operating production process; include actions to rearrange lines and to extend a factory itself.

production progress

information about the result of production that

is actually executed in the manufacturing field after accepting instructions. The information about the amount of production is production progress. Production progress may be reported whenever producing or by being unified for every specific period.

production rule

item for an order from a customer; gained by executing the serial defined operations to the end; usually produced using some parts and materials.

production rule

information to indicate the way of operating or the operation feature. The selectable relation among consumed item, produced item and used resource, the relation among lot size, task size and operation time, and the relation with mode are specified.

production seat

information shown to a customer as a means of notifying the quantity of future finished product inventory without opening the plan information. Only the number of products or the amount of resources for every period is expressed and the inside schedule information is concealed.

progress

information to show the condition on the specific date for production instruction. The condition may be expressed qualitatively and may be

expressed with the quantity information such as the amount of production at that time and a progress rate.

progress abnormality

situation where materials are late to reach or the specific process is much later than the scheduled time of completion. When the manufacturing execution system monitors production progress and judges that the delay affects on the entire production, this data is immediately sent to APS.

project-oriented batch production

method to produce the settled quantity of products for the specific period repeatedly and to stop producing. Cash flow can be maximized by anticipating customer's taste.

PSLX

standard specification and guidelines to construct a new production control system of manufacturing enterprise by integrating planning and scheduling with IT technology with centering Internet.

purchase

operation executed by the purchase section in the whole enterprise; purchase materials such as parts and raw materials; usually mean a part of operation by workers of the purchase section, however the whole period till material arrival can be taken as purchase operation.

purchase balancing

show whether the purchase content of every supplier in calculation unit such as month or week is balanced on cost or load. When supplying items everyday, load balancing in each day is necessary.

purchase plan

plan to purchase the required materials from the outside suppliers according to the production policy or the production order plan; include outsourcing for a part of process.

purchase order

order sent to a supplier to keep the required materials for a production order. Usually this is created and managed as a planning result by the purchase section.

purchase order management

manage orders of materials and outsourcing to suppliers; calculate material requirement from the number of production orders and decide the time to order and the amount of orders based on a material order method; also manage due date.

3.13. Q • R

quality alarm

alarm information in the case where the value of quality abnormality is over the ordinary limits and it is necessary to take measures to the

situation immediately. This alarm can be specified by human's judgment when abnormality is suspected even if inspection process isn't especially established.

quality control

repeatedly execute a cycle of plan, execution, check, and action in order to correctly grasp the quality of product or manufacturing process of fabrication and to get the aim quality requested from a customer.

ratio of common parts

comparison between a rate of the number of parts to the number of product items and a rate of the average number of parts in a product. Even if the number of parts per a product is large, the number of parts doesn't increase in proportion to the number of products when many parts are made common.

receipt message

message to inform whether the application receiving a request message or a response message accepts the message content; sent before processing individually.

receipt notification

information to show that products are supplied to a customer and there is no fault in the content and the quantity of products; sent from the customer when or after supplying the products. When reception inspection is executed,

acceptance notification is specified separately.

release

event to send order information to a production filed or to indicate that the order sent beforehand can start as the materials arrive. Date and precedence can be specified like other events.

release instruction

instruct shipping the material stock or the stock of work in process to be managed in order to start producing in the later processes; specified also to supplies for outsourcing.

request message

message to request any processing or information inquiry to a server. When receiving a request message, a response message or an exception message must be returned to a sender without fail.

research and development

to design a new technology to fill the gap between customer's needs and the existing technology in order to make the customer needs a concrete form as a product.

resource

required for executing operations. Capacity is specified in resource beforehand and some operations can be executed at the same time

within the capacity range. For example, device, machine, equipment, worker, tool and so on.

resource order

order to request the specific resource or resource capacity; specified in the case that the capacity is insufficient when planning capacity. Outsourcing can be regarded as a resource order. This order is structural classification of order.

resource planning

plan to extend equipment and lines for production and establish and close a factory with an eye to the future market trend; relate closely with cash flow management and enterprise strategy.

response message

message to respond to a request after receiving a request message. Response messages are to report the processing result or to return the content for data inquiry.

responsible days of reception

number of preceding days with responsibility of reception in the purchase plans notified beforehand as the unofficial information. As for the order within this number of days, even if the quantity of products and due date can be modified, products must finally be bought.

RGB

way to express color for data display; specify notifications from 0 to 255 for each of three

colors red (R), green(G)and blue(B) and express the color with the combination.

role

parameter expressing the relation between two classes and a part played by one class to the other.

3.14. S

sales

operation executed by the sales section in the whole enterprise; operation to sell finished products; include operations to gain an order before products are finished and to decide the detailed option data with a customer.

sales BOM

BOM created by the design section with the necessary information from the view of sales; include the information for maintenance after a product is actually used and the information about spare parts.

sales plan

middle-long period sale plan created mainly by the business section; decided with considering forecasting, opinion from a customer and a target value of salesperson.

schedule

information specified as a result of scheduling;

gathering of concrete instructions such as operation content, a start date and an end date in each production resource for the scheduled period.

scheduling

dissolve the time competition between items or resources that actually exist and decide information such as a start date and an end date of operation or the used resource in order to guarantee the execution possibility of the given plan.

server

system on the side to provide service when two programs can communicate with each other on the network and one side can provide service to the other.

service and support management

to support the field where products are actually used and to provide service to meet the request from a customer after selling a product in order to introduce the market needs into a product.

setup

operation corresponding to preparation or clean-up required for one operation; not produce items but occupy resource during producing. Usually the resource used by setup is the same as the resource used by the target operation.

shift pattern

detailed shift information specified in

calendar; include information about start time, end time and break time zone in process. The available capacity value in each time zone can be specified in detail.

shipping management

ship products according to an order from a customer and manage product inventory. When products cannot be produced as scheduled, a shipping form and timing are controlled if necessary.

shipping notification

information to notify that the product for the definite order is shipped. The preparations for accepting and producing the product can be executed beforehand by receiving this information from a customer.

shipping schedule

information to instruct shipping; specified in the case where product inventory is allocated to an order, or specified to the progress information that the finished products are stored in product inventory with considering the specified due date.

shop

unit to unify and manage processing shops and assembling shops to some degree in a chain of processes from releasing materials to finishing products. This is for scheduling and load plan.

single pegging

to execute pegging between process orders to serial processes using the pegging information expressing the relation between some orders. When lot ramifies and joins, the final customer order may not be specified.

site

unit to control production. The whole enterprise sometimes corresponds to site and a site is sometimes independent in every factory. The minute plan is created in the site and the rough federation planning is created between sites.

SMTP

communication protocol to send a mail on Internet; used for relaying between mail servers and transmitting a mail from a mail client to a server.

SOAP

method to send the content in the envelope with XML for some programs to communicate on Internet; has a merit that the communication doesn't depend on the system environment of receiver.

sold out rate

rate that the product requested from a customer cannot be supplied immediately or until the latest customer due date which can be delayed. Most of such cases lead to miss an opportunity.

specification modification

to modify specification or option to

characterize a product; has smaller effect than design change. Because the option is different for each customer in individual order production, specification is frequently changed.

speculative production

method that products are finished before receiving an order from a customer and customer order is allocated to product inventory as a production management form. Supply lead time is shortened, however the precision of forecasting is needed.

SQL

query language for relational database; can not only retrieve, calculate data, but also add and delete data; can be defined in the unified format without depending on individual database product.

standard data

various basic parameters used for calculation in production management or cost control. A measured value, a calculation value, an experiment value and a statistics value are often used as a standard data. For example, "machine operation cost per hour", or "rate of inferior goods" and so on.

stock

quantity of the items existing on each date and time: one of the state values of item and the sum of lots belonging to the item. The maximum value

and the minimum value can be specified according to capacity.

stock control

efficiently use stock for assimilating fluctuation of market demand and realizing balanced production as much as possible; decide when, on what point on supply chain and how much stock is possessed.

stock plan

information that is beforehand specified by calculating when, where and how many inventories are required in each product or each material in order to fill a gap between the expected future supply and demand.

storage

operation to keep the items for the fixed period without changing the quality and location data of the item in operations concerned with production. This operation is for the case where it is necessary to recognize storage as one operation.

subclass

lower class where the feature of some class is concreted more to the class; subclass itself is one class; term for object-oriented modeling.

substance

show the concrete existence in the item class, while item is the abstracted information; exist

at some place and time and can be identified with individual identifier.

successor

constraint that the specified operation must start after finishing the predecessor operation in interval between two operations; can be defined for the interval between events or among operation and events.

supplier

subject who receives an order when APS issues the order to the outside. Suppliers are divided into material traders, outsourcing suppliers and transportation trader according to the requested content.

supplier management

select suppliers and decide the contract content in order to supply the required materials efficiently under the favorable; include the case where a part of process is executed by outsourcing besides materials.

supplies

supplied materials or work in process required for producing a product when commissioning a part of production process to a supplier by outsourcing; include paid supply and free supply.

supply and demand control

control the quantity of supply and demand from the viewpoint of the whole enterprise.

Basically a stock plan assimilates fluctuation, however a sales plan and a capacity plan may be changed as occasion demands.

supply chain

situation where a great many enterprises from a supplier placed on the highest point of stream to makers and distribution enterprises take part in production and make a chain to provide products to the last customers, consumers.

supply chain management

management of supply chain where an enterprise belong; keep the relation among customer, supplier, outsourcing supplier and transportation and distribution enterprises to get the maximum performance at all times.

supply lead time

required time from the time when a customer issues an order to the time when a product is actually received; parameter that greatly affects a satisfaction degree of a customer. If the requested value cannot be achieved, opportunity is missed.

synchronous communication

communication method that a client sends a request to a server and the next processing is executed after receiving a response. This communication makes program of client simple but doesn't suit for the case where it takes long time to respond.

synchronous message

message for synchronous communication (refer to synchronous communication)

3.15. T

task

identification information to show the load of used resource by one production instruction. When some resources execute one operation, the number of tasks is the same as the number of the resources.

task size

task size about resources actually used by individual operations or the constraint information; the case that task size used at the same time by one operation is decided to the capacity as total value of resource.

throughput

period profit calculated by taking the direct cost (only material cost) from the sales price; indicate how efficiently a factory makes profit; has the feature that the fixed cost such as equipment cost isn't considered.

time bucket

divided time for plan or schedule into the specific length periods. Week or day and so on correspond to time bucket. Logic can be

simplified by planning based on the calculated value in time bucket.

time to spare for due date

rate of supply lead time specified at ordering to the lead time when an enterprise receiving the order can afford to supply products. One or below means there is no time to spare.

tool

secondary resource required for operating by equipment and workers; generally can move between facilities. Sometimes tool hinders producing even if equipment and workers can operate.

tracking

information to indicate the relation between produced lot and consumed lot in quantity when the consumed lot by one production instruction exists to the produced lot by the other production instruction and both of them indicate the same substance.

transportation

operation to change only location information of the item without changing the quality of target item in operations concerned with production; can be divided roughly into transportation in site and transportation between sites.

transportation management

create a plan for transportation between enterprises or in enterprise and manage

transportation in order that the plan is efficiently executed; consider the federation with production plan.

transportation order

order to request the outside suppliers to transport and distribute products when delivering products to a customer. As occasion demands, material transportation can be called transportation order.

transportation schedule

operation schedule to a concrete order or the plan forecasting the future as for transportation operation required in the enterprise or between enterprises.

3.16. U · V · W · X and others

unofficial order

information that the content which will be ordered in the near future, not an official order is sent from a customer beforehand; used for production preparation and material supply. The premise is that a definite order comes for an unofficial order content with a certain measure of precision.

urgent order

order urgently requested in the different way from the regular order process. The lead time is often shorter than the lead time specified

beforehand. This is the main cause to confuse a production field.

use case

format for using a system; information to clarify the relation between system and user and system specification request.

VMI

system to manage a customer storehouse instead of the customer. The customer pays a maker only for the quantity of products taken from the storehouse. The maker is responsible for supplying products without running out of stock.

Web Service

Web base software that is made parts available from outside by SOAP. The functions and calling method are defined individually with description language WSDL.

work in process

item existing in the middle of process before an item becomes a product or an intermediate product; theoretically exist all between processes theoretically; added with the code that is automatically created by a computer because a worker doesn't usually identify it.

work station

place to execute operations. Machine and equipment may be regarded as belonging to work station and managed instead of work station. In

this case, work station is a resource for schedule.

worker

resource corresponding to an operating person. There is the operation that can be executed only by a worker without equipment. Workers with the same skill may be grouped and workers are treated in a personal unit.

XML

description form for exchanging data by different programs on Internet. Its feature is that inserting identification codes called tag into each place of data enables the party to understand the data content.

3PL

logistics that products and materials are transported by the third party, neither producer nor demand party; strategic system not only transporting products, but also considering efficiency and customer's needs.

A Specification Correspondence List

- 00 . . . Guidance
- 01 . . . Grand Design for Manufacturing Enterprise
- 02 . . . APS Agent Model
- 03 . . . PSLX Domain Objects
- 04 . . . XML Standard Specification

Term	00	01	02	03	04
location					
instance information					
interface					
material reception management					
permanent					
agent					
engineering chain					
response message					
order					
order release					
order due date					
object					
ontology					
outsourcing					
definite order					
operation calendar					
operation progress					
calendar					
Gantt chart					
site					
completion progress					
engineering architecture					
cash to cash cycle					

Part 5: PSLX Common Dictionary (66/73)

Term	00	01	02	03	04
cash flow					
supplier management					
collaborative option decision system					
business package					
business protocol					
changeover					
urgent order					
client					
class					
grand design					
complaint					
management environment					
management resource					
management strategy					
plan					
planning cycle					
precision of planning results					
planned order allocation					
cost control					
research and development					
inspection progress					
inspection					
standard data					
substance					
resource planning					
successor					
outsourcing					
process specification					
process design					
purchase					
purchase order					
purchase order management					
purchase plan					

Part 5: PSLX Common Dictionary (67/73)

Term	00	01	02	03	04
purchase balancing					
customer					
customer order					
occurrence					
mixed production and order allocation system					
server					
service and support managment					
stock					
stock plan					
inventory inquiry					
stock control					
latest option decision date					
operation					
operation order					
interval					
shop					
production instruction					
progress					
worker					
work station					
capacity production seat modification					
capacity production seat creation					
capacity production seat reservation					
subclass					
supply chain					
supply chain (SC) management					
supplier					
predecessor					

Part 5: PSLX Common Dictionary (68/73)

Term	00	01	02	03	04
work in process					
supplies					
resource					
resource order					
tool					
material					
dead stock					
material stock					
event					
sold out rate					
shift pattern					
cash flow management					
intensive					
supply and demand control					
order management					
build-to-order production					
shipping management					
shipping schedule					
shipping notification					
release instruction					
receipt notification					
receipt message					
option data decision request					
consumed lot					
consume					
specification modification					
single pegging					
progress abnormality					
tracking					
scheduling					
schedule					
throughput					
production					
production order					

Part 5: PSLX Common Dictionary (69/73)

Term	00	01	02	03	04
production order planning					
Booking-type production system					
production seat					
production progress					
production preparation					
production policy					
production rule					
produced lot					
produce					
fabrication					
manufacturing schedule					
manufacturing cost					
manufacturing person hour					
manufacturing order scheduling					
manufacturing schedule					
manufacturing execution					
manufacturing progress					
Bill of Manufacturing					
product order					
product					
product inventory					
product design					
product family					
design change					
design					
equipment					
facility abnormality					
machine usage rate					
facilities maintenance					
precedence					
immediate shipping rate					
alternative resource					
time bucket					

Part 5: PSLX Common Dictionary (70/73)

Term	00	01	02	03	04
number of concurrents					
task size					
task					
setup					
logistics planning					
process order					
demand chain					
synchronous communication					
synchronous message					
permanent					
domain object					
unofficial order					
precision of unofficial order					
available to promise					
due-date promising					
on-time delivery rate					
due-date estimation					
time to spare for due date					
supply lead time					
capacity					
capacity plan					
capacity control					
party					
generalizing					
intermediate product					
sales plan					
sales					
sales BOM					
inquiry					
pegging control					
responsible days of reception					
business architecture					
business component					
business process					

Part 5: PSLX Common Dictionary (71/73)

Term	00	01	02	03	04
business model					
asynchronous communication					
asynchronous message					
pegging					
indicator					
quality alarm					
quality control					
item					
item order					
load					
load plan					
load balancing					
ratio of common parts					
planning cycle					
full pegging					
project-oriented batch production					
product life cycle					
average number of inventory days					
policy management					
storage					
maintenance					
maintenance instruction					
maintenance schedule					
maintenance request					
master information					
multi-site federation planning					
forecast order					
speculative production					
estimation					
model change					
use case					
transportation					

Part 5: PSLX Common Dictionary (72/73)

Term	00	01	02	03	04
transportation order					
transportation management					
transportation schedule					
request message					
exception message					
layer					
legacy system					
role					
lot					
lot size					
lot tracking					
assign					
3PL					
APS					
APS agent					
APS collaboration					
BOM					
BTO					
COM / DCOM					
CORBA					
CPFR					
EbXML					
EDI					
HTTP					
MES					
MRP					
PSLX					
RGB					
SMTP					
SOAP					
SQL					
VMI					
Web Service					
XML					

