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# PSLX Engineering Specification

## Guidance

PSLX-00

<< DRAFT >>

Version 0.2

### Update History

Date	Author	Version	Explanation
2003.2.26		0.1	Translate to English
2003.7.23		0.2	Insert Figures

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25	<Note>	
26	PSLX Consortium Japan and the members don't take on the responsibility	
27	for any losses caused from using this specification and the contents	
28	of this specification.	

# 1 Introduction

## 1.1. Purpose of PSLX Engineering Specification

PSLX Engineering Specification indicates the technical guideline for manufacturing enterprises to introduce the concept of APS (Advanced Planning and Scheduling) adapted to each business environment. And the purpose of this specification is to decide a minimum of the required rules that the implemented Planning and Scheduling functions can be linked with each other in the future Internet society.

## 1.2. Purpose of This Specification

This specification aims at playing a part as guidance for the entire PSLX Engineering Specification composed of five parts. This specification shows the explanation about APS outline, Engineering Architecture as a sketch of the whole PSLX engineering, and the guideline for implementing a system with actually applying PSLX.

## 1.3. Intended Reader

Intended readers of PSLX Engineering Specification are as below.

Manager in charge of IT of manufacturing enterprise, engineering staff in IT section of manufacturing enterprise, consultant in IT strategy of manufacturing enterprise, consultant in production management, manager of SI enterprise, engineering staff of SI enterprise, manager of software package vendor, engineering staff of software package vendor, student of production management

Each part in this specification describes the intended readers in the above list in detail, so refer to each part for details.

## 1.4. Structure of PSLX Engineering Specification

PSLX Engineering Specification consists of the following five specifications besides this specification (Guidance : PSLX-00).

1                   ❖ **Part 1 : Grand Design for Manufacturing Enterprises (PSLX-01)**

2                   Various manufacturing enterprises are sorted out according to the  
3                   environment where the enterprises are placed and the problems  
4                   that each type and form of manufacturing enterprise faces now.  
5                   A notable evaluation index on management to distinguish those  
6                   problems is explained.

7                   This part explains some new collaboration systems applying APS  
8                   for the abstract models of manufacturing enterprise that are  
9                   clarified. It also shows what effects are given to the business  
10                  model of each manufacturing enterprise with individual character  
11                  by the systems.

12                  ❖ **Part 2 : APS Agent Model (PSLX-02)**

13                 This part defines the decision-making systems with Planning  
14                 function or Scheduling function such as production scheduling or  
15                 sales scheduling as APS Agent Model. Moreover it defines the  
16                 functions that the systems must have. This part also shows the  
17                 data required to realize each function of APS Agent.

18                 The specification defined here is an appearance of the use case,  
19                 not an internal structure of APS system. Especially this part  
20                 handles an interface form between APS systems or between APS system  
21                 and a subsystem other than APS system.

22                  ❖ **Part 3 : PSLX Domain Object (PSLX-03)**

23                 This part defines the concept schema for the data to be used in  
24                 APS and explains the contents of data. PSLX Domain Object  
25                 defined here is the model that a schema of actual database in  
26                 each manufacturing enterprise is made more abstract.

27                 The standard APS system is defined on the basis of this PSLX Domain  
28                 Object. Therefore when the system is implemented, the schema of  
29                 PSLX Domain Object and each database structure must be mapped.  
30                 This specification explains also the procedure for mapping with  
31                 simple samples.

32                  ❖ **Part 4 : Rules for XML Data Exchange (PSLX-04)**

1 The rules for data exchange are decided with supposing various  
2 cases when cooperatively solving a problem between APS systems  
3 or between APS system and a subsystem other than APS system.  
4 Data exchange between the systems including APS system must be  
5 implemented under this rule.

6 The contents provided here include the definitions of business  
7 protocols between two applications exchanging data, exception  
8 handling such as error handling, and the detailed XML tag  
9 structure on the contents of message to be exchanged.

#### 10 ✧ **Part 5 : PSLX Standard Dictionary (PSLX-05)**

11 This part defines the usage and the meaning of the terms used in  
12 this specification. All parts of this specification are  
13 described in accordance with the meanings defined here.

14 PSLX Standard Dictionary is the information for understanding the  
15 contents of this specification and also taken as a basis of  
16 communication between the related IT vendors or between a vendor  
17 and users when a system is actually constructed for manufacturing  
18 enterprises on the basis of this specification.

#### 19 **1.5. Policy on Copying Specification**

20 PSLX Consortium Japan owns copyright on this specification. However it  
21 is free to copy this specification and distribute the copies. It is  
22 also free to translate the contents of this specification into foreign  
23 languages except English. But it is prohibited to modify the contents  
24 of this specification without the permission of PSLX Consortium Japan.  
25 When referring to a part or all parts of the contents in this  
26 specification for another document, write URL (<http://www.pslx.org>)  
27 of the applicable item on the WWW site of PSLX Consortium Japan  
28 preserving this specification.

1 **2. Outline of APS**

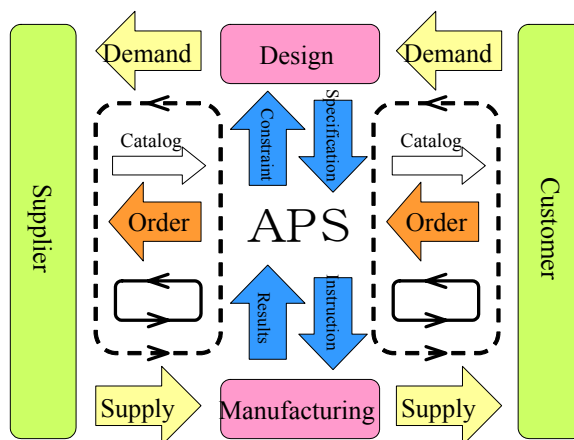
2 **2.1. Purpose of APS**

3 The purpose of APS is to contribute toward maximizing the profit of  
 4 enterprise with meeting the demand of various and unpredictable markets  
 5 by advancing Planning and Scheduling engineering for the present  
 6 manufacturing enterprise on the basis of IT, which is mainly Internet.

7 **2.2. Scope of APS**

8 The problem handled by APS is the decision-making for Planning and  
 9 Scheduling on the crossing point of a supply chain (demand chain), which  
 10 is the flow of information in a horizontal direction, and an engineering  
 11 chain, which is the flow in a vertical direction in figure 0-1.

12 The supply chain of products toward the order flow was mainly discussed  
 13 in the current supply chain. In APS, however, the products are  
 14 corresponded to the demand (invisible demand) behind the order.  
 15 Therefore a part of specification decision process and a part of product  
 16 development in the order manufacturing are also objects to be handled.



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Figure 0-1 Scope of APS

1 The important target for APS is the problem of Planning or Scheduling  
2 that leads to an everyday action in manufacturing enterprise. When the  
3 speed of decision-making is regarded as important, APS is especially  
4 effective. Because the environment where the manufacturing  
5 enterprises are placed becomes more unpredictable and it is necessary  
6 to rapidly keep up with the change of environment.

7 As APS discusses any actions (work) in business activity, it doesn't  
8 handle the problems that directly manage products or the structure of  
9 information, for example financial plan, process scheduling and  
10 designing, on the same level. So in APS the very action to solve these  
11 problems, not the contents of problem, is treated as one work in a plan.

### 12 **2.3. Relation between APS and Internet**

13 APS aims at integrating various operations in Planning and Scheduling  
14 for manufacturing enterprise as much as possible. But there is a case  
15 where each decision-making must be executed in the separated places  
16 because of physical or institutional reasons.

17 In such a case, APS realizes the cooperative solution by connecting each  
18 decision-making in each division or each function through network.

19 In short, APS in figure 0-1 is a combination system composed of linkage  
20 of some decision-making agents not only one decision-making agent.

21 If the agent that makes decision such as Planning or Scheduling is called  
22 APS Agent, the cooperation between APS agents must be realized by  
23 communicating on Internet or intranet on the basis of XML as much as  
24 possible.

25 PSLX recommends strongly that a system will keep flexibility and  
26 extension in future with progressing the interconnection of system by  
27 roughly linking with each of APS systems in order that the whole  
28 manufacturing enterprises may implement APS function.

### 29 **2.4. Planning and Scheduling**

30 APS is a new management system, which regards the important  
31 decision-making, like Planning and Scheduling for manufacturing

1 enterprise, as a core of system. The terms, Planning and Scheduling  
2 have meanings as follows and they are the important concepts on  
3 discussing APS.

#### 4 ✧ **Planning**

5 Planning is an action to specify a target or means for making up  
6 the gap between demand and fact and to decide the structure and  
7 a parameter between them. In short, Planning indicates the  
8 problem itself and shows the concrete ways of solving the problem.

9 However, the main purpose of Planning is specifying the structure  
10 and a parameter value with considering the relation of cause and  
11 effect. Therefore the gotten result does not always guarantee  
12 the possibility of execution on the actual time. And so  
13 Scheduling is required to make the planning information, which  
14 is Planning results, more positive.

#### 15 ✧ **Scheduling**

16 Scheduling is an action to get rid of a time competition between  
17 the individual real items or resources and to decide the starting  
18 time and the finishing time of the concrete work and the  
19 allocation of time for each item or resource in order to guarantee  
20 that the targets and the meanings specified in Planning can be  
21 executed.

22 Input information for a Scheduling problem is the planning  
23 information obtained by Planning. In a word, only one part of  
24 possibility obtained by Planning is considered in Scheduling.  
25 Even if the best-suited solution is obtained for a Scheduling  
26 problem, the solution is not always guaranteed that the  
27 best-suited solution will satisfy the original requirement.

28 Thus Planning and Scheduling have the close relation each other.

29 Therefore this specification strongly recommends that Planning and  
30 Scheduling be handled by integrating them as much as possible in the  
31 structure process of APS provided by this specification.



## 3. APS Engineering Architecture

### 3.1. Part of Engineering Architecture

The following APS Engineering Architecture is a guideline to prevent from unnecessary confusion when APS is discussed or considered variously. Each engineering information falls under each layer in APS Engineering Architecture. So directly connecting two techniques in the different layers must not be handled. However, it is possible to connect techniques under two different layers, which are located vertically, by defining the interface between each of layers.

### 3.2. Outline of Each Layer

APS Engineering Architecture consists of five layers as below.

Layer 1 : Manufacturing Business Model Layer

Layer 2 : APS Collaboration Layer

Layer 3 : APS Agent Layer

Layer 4 : Domain Object Layer

Layer 5 : Data Implement Layer

#### ◇ Layer 1 : Manufacturing Business Model Layer

This layer shows the environment of each manufacturing enterprise, and the value and the purpose that the manufacturing enterprise has. And also it discusses a business model for embodying an industrial strategy. This layer takes the whole manufacturing enterprises as one system and decides the external specification of system itself on the relation between the system and the external environment.

APS Collaboration Layer is the layer that discusses the structure and the mechanism of manufacturing enterprise. Meanwhile in Manufacturing Business Model Layer, the environment or the problem of manufacturing enterprise can be objectively discussed by expressing individual manufacturing enterprises with a specific index.

#### ◇ Layer 2 : APS Collaboration Layer

1 This layer discusses the internal mechanism of manufacturing system by  
2 taking each work as a unit of Planning and Scheduling elements. This  
3 is the layer where APS is realized with collaborating each  
4 decision-making agent in an enterprise. The structure of  
5 collaboration has various patterns and so the individual enterprise  
6 business consists of the combinations of such patterns.

7 In this layer the internal parts of APS system are black boxes and their  
8 relationship and patterns of communication are discussed. In short,  
9 the external specification of APS system is given here. This layer  
10 handles a booking-type production system, a cooperative specification  
11 decision system or a system for multi-site planning linkage.

#### 12 ◇ **Layer 3 : APS Agent Layer**

13 This layer takes the agent that makes the decision with elements of  
14 Planning and Scheduling in manufacturing business, like production  
15 scheduling (medium scheduling), scheduling, manufacturing scheduling,  
16 sales planning, purchase planning, design workflow planning, as APS  
17 agent. And it discusses the internal specification. Moreover the  
18 standard domain objects required by each agent are specified and the  
19 interface between them is discussed in this layer.

20 APS agent may consist of only programs on a computer but there are many  
21 cases where a human has something to do. APS agent isn't always fixed  
22 and it is possible to suppose that APS agent moves between systems as  
23 occasion demands.

#### 24 ◇ **Layer 4 : Domain Object Layer**

25 This layer specifies the domain object required to realize APS. The  
26 domain object defined here is conceptual and the implementation form  
27 is not mentioned. This layer concentrates on selecting the common  
28 parts in as many manufacturing enterprises as possible as a template  
29 of the data schema actually owned by each manufacturing enterprise.

30 The domain objects handled here are the conceptual models existing in  
31 many manufacturing enterprises and so it is impossible to include all  
32 of various data of each enterprise. Therefore it is necessary to

1 separately add the data to the part that is unable to be made common  
 2 for each example of each manufacturing enterprise.

3 **◇ Layer 5 : Data Implement Layer**

4 This layer brings up the concrete structure and the contents when  
 5 implementing PSLX Domain Object on the actual database. Even if the  
 6 conceptual models are same, they have the different implementation form  
 7 according to the design idea of each information system. However the  
 8 actual structure of data must be mapped between conceptual models  
 9 defined in Domain Object Layer as much as possible.

10 On developing systems, the discussion in this layer is very important  
 11 and must be considered individually. It is supposed that the know-how  
 12 and the engineering that system development enterprises have in their  
 13 own right are handled individually in this layer. A part of  
 14 implementation that must be standardized such as the rules for data  
 15 exchange with XML is taken as a common discussion in this layer.

16 **3.3. Relation with This Specification**

17 Table 0-1 shows the relation between this specification and APS  
 18 Engineering Layer.

19 Table 0-1 Relation between APS Engineering Layer and this  
 20 specification

Layer 1	Manufacturing Business Model Layer	○				○
Layer 2	APS Collaboration Layer	○	○			○
Layer 3	APS Agent Layer		○		○	○
Layer 4	Domain Object Layer		○	○	○	○
Layer 5	Data Implement Layer			△	○	△
Part 1 : Grand Design for Manufacturing Enterprises						
Part 2 : APS Agent Model						
Part 3 : PSLX Domain Object						
Part 4 : Rules for XML Data Exchange						
Part 5 : PSLX Standard Dictionary						

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First, Part 1 "Grand Design for Manufacturing Enterprises" takes charge of two layers, Manufacturing Business Model Layer and APS Collaboration Layer. Manufacturing Business Model Layer handles the outer environment of manufacturing enterprises and individual problems in order that each enterprise draws a new grand design. Besides APS Collaboration Layer handles the concrete structure.

Part 2 "APS Agent Model" takes charge of APS Collaboration Layer, APS Agent Layer and Domain Object Layer. APS Agent Layer has the deepest relation with APS Agent Model. But the internal logic executed properly in APS Agent Layer is not taken up here. Because the internal logic is the know-how owned by each package vender.

Part 3 "PSLX Domain Object" takes charge of Domain Object Layer and Data Implement Layer. However the great majority of part 3 handles the data schema structure of Domain Object Layer and shows only the guideline to map between Domain Object Layer and Data Implement Layer with reference examples concerning Data Implement Layer.

Part 4 "Rules for XML Data Exchange" aims at APS Agent Layer, Domain Object Layer and Data Implement Layer. APS Agent Layer defines a business procedure for exchanging data by APS system. Domain Object Layer defines the contents of data model to be exchanged. Data Implement Layer defines the tag structure of the actual XML data.

Part 5 "PSLX Standard Dictionary" aims at all of layers. However the purpose here is explaining terms appearing in each layer. The relation between layers is not described. Same term may be used in some layers. If the meaning is different in every layer, the term is put to proper use.

## 4. Guideline for System Implementation

### 4.1. How to Use This Guideline

The guideline for system implementation shown in this chapter indicates the basic way of thinking when each manufacturing enterprise implements the APS concept. This specification recommends that the project be advanced referring to the following guideline in order that manufacturing enterprise may prevent mistakes, which they apt to fall into in process of making IT, and that APS may give the maximum effect.

### 4.2. Notes on System Implementation

#### ◇ Importance of Grand Design

When considering whether a new system is introduced, avoid picking up and handling a partial phenomenon. And it is not recommended considering that an existing business package is applied. At first it is important to draw the grand design for manufacturing enterprise that starts from the entire image --- what true enterprise should be. Especially APS often changes the decision-making mechanism of enterprise basically and so the development without deciding partial improvement and a target must be avoided.

#### ◇ Business Progress and System Strength

The more innovative enterprise is, the more improved information system is. Whenever shifting to a new business model, the information system must change its form. But actually the system cannot keep up with a business speed whenever a new system is developed. It is necessary that the system be beforehand built in the form that completely separates into the front end (work process) and the back end (database). And the mechanism of the system must be rebuilt flexibly according to a business change.

#### ◇ Communication by XML and Function Division

1 In the system realizing APS, it is unnecessary to gather the data together  
2 for processing the data. There are some cases where database should  
3 be dispersed physically. If anything, the point of APS implementation  
4 is how the package and the legacy system specialized in individual  
5 Planning functions are linked. And then each subsystem must be  
6 independently designed in a functional unit as much as possible. The  
7 data linkage between applications using XML must be put in the core of  
8 engineering. The mechanism must have flexibility and expansion.

9           ✧ **From Development with Vertically Divided Business to**  
10           **Layer-oriented**

11 In APS Engineering Architecture, the engineering on APS is arranged in  
12 every layer. It is recommended that the discussion and the development  
13 be advanced with dividing engineering into every layer as much as  
14 possible for introducing the engineering on APS. If anything, the  
15 usual development is vertically divided and the development from a  
16 business model to DB structure has been advanced as one package. It  
17 is the present condition that mismatch is often found in the relation  
18 between business operations, or on data linkage later. In APS, the  
19 linkage between individual systems, which is a unit of decision-making,  
20 is specially important and so it is recommended advancing the  
21 development in layer-oriented from beginning.

22           ✧ **Case of Small and Medium-sized Enterprises**

23 What can small enterprises do? They are the enterprises that cannot  
24 spend a large amount of money on IT, or doesn't have specialists on IT.  
25 It is reality that many enterprises are worried with expensive IT tools  
26 and packages and wonder whether they can use them efficiently. In this  
27 case, it is likely to be more acceptable that the expensive IT tools  
28 or packages aren't introduced without preparation. However the basic  
29 infrastructure, such as personal computer or Internet, must be prepared  
30 and at the same time the data preparation and the business flow must  
31 be re-inspected. The level of IT will make rapid progress only by  
32 making the information, which has been handled unclearly, a digital  
33 format.

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### **4.3. Concrete Procedure for Project**

#### **◇ Understanding Environment and Problem**

Before forming a project, the environment where the manufacturing enterprise is placed must be understood rightly. At first it is necessary to recognize how the business environment has changed until now and how the present or future environment will change on a large scale. And then handle completely what results will be brought in the future business environment by the original engineering or network that the enterprise has now. The purpose here is that the whole enterprise recognizes the subject to be executed for defining a rightful state and the direction to go with reference to the reality.

#### **◇ Determining the Quantity of Target and Policy Decision**

Continuously decide a target and a policy. The target must be expressed in a concrete numerical value. For that purpose, specify some indexes characterizing the enterprise performance. Then analyze the present conditions and conform the present position of the enterprise on the selected index. After that, discuss what the specified indexes must be for solving problems of the enterprise and take the value agreed there as a project target.

At this point, the means for achieving its aim is not clear yet. The casual relationship between aim achievement and various means must be classified and prioritized and the efficient action plan with adaptability must be created in order to specify the concrete plan to be executed by the project. Since there are many means to solve a problem and achieve the aim, it is important to decide the policy as a framework for making up the means into one action plan.

#### **◇ Business Model Redesigning**

If concluding that the concept of APS must be introduced positively and the usual business must be reformed, start redesigning a business model. At first, dig up the decision-making component executing Planning and Scheduling for various business activity levels out of various business operations of the enterprise. Then clarify the relation of collaboration between each component.

1 Next select the model that seems to contribute to objective achievement  
2 of the enterprise out of APS collaboration models and apply it to the  
3 present business from top to bottom. The important point here is that  
4 the point where the data in business occurs and the point where the data  
5 is used cannot be moved. And so it is possible to compare the present  
6 decision-making component and the selected component on APS  
7 collaboration.

8 Use APS collaboration model in this specification as a template and  
9 redesign the original collaboration form of enterprise and define the  
10 necessary conditions for individual subsystems clearly.

#### 11 ✧ **Data Preparation and System Development**

12 Shift to the phase of system development after completing designing.  
13 However it takes more time to prepare data than to develop a system.  
14 Therefore start preparing the required data with developing a system  
15 or before developing a system according to circumstances. Consider  
16 executing the pilot project for the purpose of preparing data step by  
17 step.

18 The important common point of data preparation and system development  
19 is that a common data schema must be decided in the whole industries  
20 beforehand. Thus, it becomes easy to apply the prepared data to  
21 individual APS systems. Domain object in this specification must be  
22 a guide to the common scheme design.

23 Systems are developed in a unit of module for individual decision-making.  
24 There are some cases; a system is developed newly, only interface is  
25 developed with using a legacy system, or package software is bought and  
26 applied. In all cases it is necessary to consider that the functions  
27 in individual subsystems and the linkage with the outside are important.

28 Data exchanging method with XML must be adopted for exchanging data  
29 between APS systems or between APS system and a subsystem other than  
30 APS system. Thus the decision-making process can be linked between  
31 various application programs with a different design ideology including  
32 human. When developing an interface under XML standard rules shown in



1           this specification, the system can be linked without deciding a  
2           specification individually.

3           ◇ **Actual Use and Feedback of Results**

4           The newly developed system is operated actually in a unit of APS system  
5           or in the entire APS collaboration system. As the business operations  
6           in manufacturing enterprises always move and the planning system is a  
7           very important problem as a framework of manufacture decision-making,  
8           the system must be shifted to the actual operation very carefully.

9           It is recommended that a system be shifted to the actual operation step  
10          by step for keeping the risk to a minimum. The speed and complication  
11          of decision-making should gradually increase after confirming that the  
12          decision-making as a core is surely executed and that the business is  
13          carried out without delay. When executing collaboration, the way of  
14          gradually synchronizing peripheral subsystems after starting up the  
15          main APS system is suggested.

16          Evaluate the final APS introduction effect with the concrete evaluation  
17          index in comparison with the target and policy of the specified project .  
18          According to circumstances, it is necessary to repeat the above project  
19          for surely getting effects without being eager for good results.

20

21

## 1 **5. Appendix : Questions**

### 2 **◇ What is the difference between scheduler and APS?**

3 Scheduler is a constitutive element of the core of APS. Thus the  
4 scheduler must be flexibly able to be linked to Planning functions such  
5 as ability planning or requirement planning. Moreover the latest  
6 scheduler includes the Planning functions and the scheduler that can  
7 be called APS system by itself appears.

### 8 **◇ Is the interest in APS short-lived popularity?**

9 The term “APS” may be in fashion or out of fashion. But the way of  
10 thinking and the theory behind the term will be taken over in every ten  
11 years from now on. If anything, there are a lot of incomplete parts  
12 and large spaces to be developed in APS.

### 13 **◇ Does APS deny the present legacy system?**

14 If legacy system is regarded as a component of decision-making, it will  
15 survive as assets of enterprise literally and the effect will be display  
16 in the whole collaboration by APS. On the other hand, systems, which  
17 cannot be linked with other systems, will be left behind the times in  
18 future.

### 19 **◇ Are the contents on XML the main part in this specification?**

20 In PSLX, XML is regarded as the important engineering to implement APS  
21 concept, however APS cannot be realized only with XML. This  
22 specification contains a lot of important guidelines and technologies  
23 for succeeding projects for instance Grand Design for Manufacturing  
24 Enterprises.

### 25 **◇ Must XML be used for exchanging data?**

26 Data exchanging with XML is suitable for the rough linkage on balance.  
27 Therefore in PSLX it is recommended exchanging data between APS systems  
28 or between APS system and a peripheral system in XML format. However  
29 this is not an indispensable condition.

1                    ✧ **Is it impractical that schedulers are linked beyond enterprises?**

2                    Generally it is impractical that schedulers are individually linked  
3                    beyond the wall between enterprises. Usually the decision-making by  
4                    the business department stands between them. However the number of  
5                    cases where schedulers are directly linked in an enterprise or between  
6                    cooperated enterprises for doing the more dynamic plan linkage will  
7                    gradually increase.

8                    ✧ **Must a human make decision finally?**

9                    In Planning and Scheduling managed by APS, a solution is gotten with  
10                    computer ability as much as possible. However there are many cases  
11                    where a human should finally decide the solution. APS aims at the  
12                    mechanism that specifies the range decided only with a computer and the  
13                    range decided only by a human beforehand and can make the cooperation  
14                    between computer and human flexibly.

15                   ✧ **Are designing and transportation scheduling included in APS ?**

16                   Designing and transportation scheduling are also a kind of Planning.  
17                   But it is difficult to directly manage them in APS because the object  
18                   is a shape of item or transportation route. However it is possible to  
19                   put a part of designing or transportation scheduling into APS from the  
20                   point of APS, because they include a lot of common problems to be handled  
21                   such as designing or transporting.

22                   ✧ **Will MRP (Material Requirement Planning) not be required in**  
23                   **APS?**

24                   APS can include MRP in a wide sense. But most of the present MRP cannot  
25                   be called APS by itself. Many MRP functions are taken as a very  
26                   important element for APS, on the other hand faults are also recognized.  
27                   It is expected that MRP will be assimilated into APS with largely  
28                   changing its shape in future.

29                   ✧ **How much investment is needed to introduce APS?**

30                   If you take the method that a system is gradually improved more  
31                   effectively with restricting the application range, a large investment  
32                   is not needed at a time. If anything, an investment in human resources

1 is required. Invest the larger money in consideration for purchasing  
2 packages or developing, data preparation and support after introducing  
3 a system than the amount of money for purchasing packages and the  
4 external consignment development.

5 **◇ Do XML rules in PSLX and the specifications in other EDI**  
6 **compete?**

7 Basically their structures don't compete. PSLX assumes the linkage of  
8 decision-making modules mainly inside of an enterprise or enterprises  
9 including the cooperated companies and so PSLX is used differently from  
10 other specifications for Electronic Commerce between general  
11 enterprises. However when PSLX is exchanged between enterprises, PSLX  
12 assumes the form of using EDI standards in some cases and operating the  
13 system in combination with PSLX rules.

14 **◇ Can the program developed on the basis of the specification be**  
15 **sold?**

16 Yes, it is possible. Whether you are a member of PSLX Consortium Japan  
17 or not, you can originally develop and sell the program based on this  
18 specification for business. In such a case, write "Based on PSLX" on  
19 a catalog clearly. And notify PSLX Consortium Japan.

20 **◇ Can the contents of the specification be extended originally?**

21 Basically it is possible. But it cannot be modified. The greatest  
22 merit of XML is that the shortage of function can be added and the present  
23 function can be expanded in accordance with XML rules established in  
24 this specification. The result of specification expansion may become  
25 a new standard on the next step and so notify PSLX Consortium Japan of  
26 the contents as much as possible.

27 **◇ How is a specification added or how is a version revised?**

28 The contents of this specification are maintained by a new organization  
29 taking over the result of PSLX Consortium Japan. Therefore a  
30 specification will be added and a version will be revised in the future  
31 under the more certain and open organization management. The  
32 specification of PSLX will also progress to solve a specific problem

1           in every industry and to realize APS with a high-performance function  
2           in a wider range.  
3