

## Design of Logistics Management System Based on SCM Methods

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**Abstract** According to SCM principals and choosing a mechanical manufacturing plant as prototype, the architecture of the plant's supply chain is given out. The logistics is analyzed in detail by means of SCM concept and the model of the logistics management prototype system is established. The prototype system is designed adopting B/S and C/S mixed architecture. The tool-setup management subsystem is developed by VB language tool. The subsystem has been successfully used in this plant.

**Key words** SCM; logistics management; prototype; B/S; C/S

## 基于SCM的物流管理原型系统设计

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**【摘要】**根据供应链管理的原理和方法,以某离散型制造企业的物流系统为对象,构建了供应链结构。在此基础上,分析了物流管理流程,对原型系统进行了建模,采C/S与B/S的混合结构方式,设计了物理管理原型系统的体系结构。用VB开发工具对工装管理予系统进行了设计和开发,开发的软件已在原型工厂的实际管理中使用。

**关键词** SCM; 物流管理; 原型系统; B/S; C/S

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Supply chain is a kind of network which composed by material supplying, processing, semi-manufacture, products, warehouse, manufacture, etc. The basic entries of supply chain are venders, manufactures, distributing centers and end-users. Among these, distributing centers, venders, end-users can be considered as the users of manufacture. The content of supply chain consists of material flow, information flow and capital flow and their interaction. The logistics management system based on SCM thoughts can fulfill optimal managing, promoting efficiency and supporting decision.

### 1 Supply Chain of Prototype Plant

The main tasks of prototype plant are supplying maintenance service for railway operator's locomotives and other kinds of vehicles as well as mechanical products manufactured by order. So, the supply chain of prototype plant is different from general mechanical manufactures. The supply chain is figured out after deep investigation and analysis and is shown in Fig. 1.

In Fig. 1, the material flow consists of tool-setup, tools, row-materials, maintenance parts and end-products, the capital flow consists of cash, bank checks, the information flow consists of contracts, statistics, analyzing reports etc.

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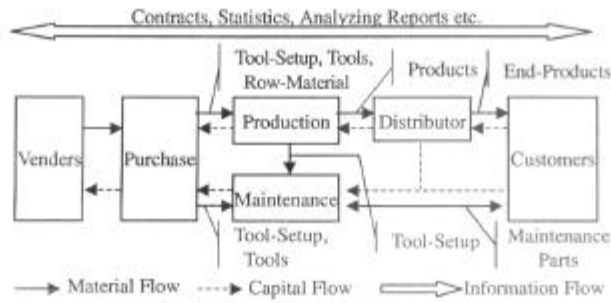


Fig.1 The supply chain of prototype plant

## 2 Model of Logistics System

Based on analyzing of managing process towards prototype plant's logistics management and with the help of BPR method, the optimized supply chain construction is obtained. Using this construction, the model of logistics management can be established as shown in Fig. 2.

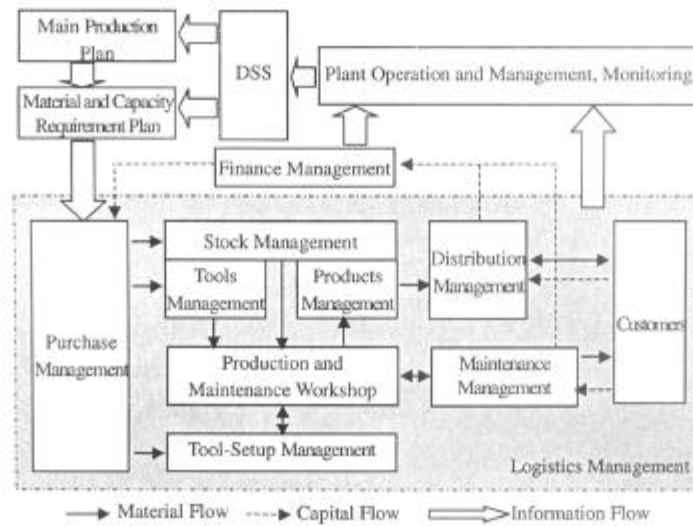


Fig.2 The model of logistics management

In Fig. 2, the logistics management system mainly contain of seven subsystems: purchase, stock, tools, products, tool-setup, distribution, and maintenance. The relationship of three different flows also figured out in Fig. 2. The function of each subsystem is described as follow.

### 2.1 Purchase Subsystem

Supplying purchase plan based on material requirement plan and capacity requirement plan.

### 2.2 Stock Subsystem

To manage the parts, tools, semi-manufacture, end-products, supplying current stock information, historical stock information, stock statistics etc.

### 2.3 Tools Subsystem

To manage the tools, supplying the overall management following the flow of purchasing→stock→workshop.

### 2.4 Products Subsystem

To manage the products, supplying the all means management following the flow of row-material→production→quality assurance→check→distributing.

### 2.5 Tool-Setup Subsystem

To manage the tool-setup, supplying the overall management following the flow of row-material→

manufacturing → workshop.

### 2.6 Distribution Subsystem

Supplying market, customer, contract management.

### 2.7 Maintenance Subsystem

To supply the closed-loop management: customers → maintenance → customers.

## 3 Topologic Layout of Prototype System

The mixed B/S and C/S architecture is adopted as the whole logistics management system's structure considering the geography features of this prototype plant. The C/S part is used in internal needs and the B/S part used for e-business needs. The topologic layout of the network is shown as Fig. 3.

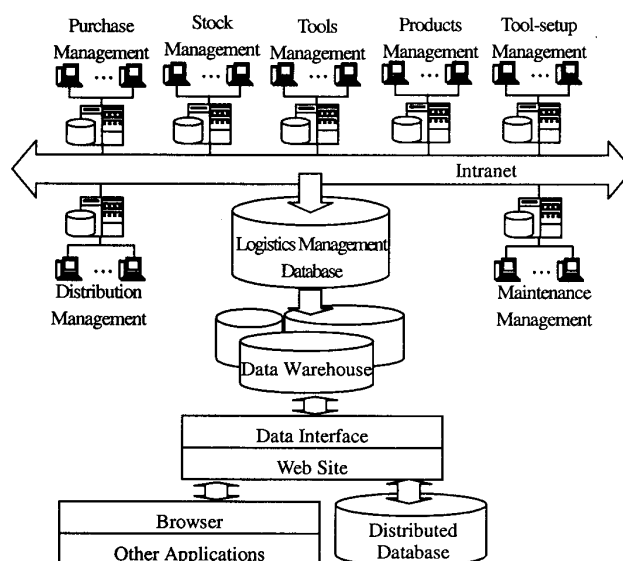


Fig. 3 The layout of logistics management network

In fig.3, the data warehouse is integrated object-oriented databases and can supply data for decision supporting. The logistics management database and distributed database are elements of data warehouse. The data stored in logistics database consist of historical detail records, current operating data, rough statistic data, fine statistics data and data index. These data are well arranged and have high consistency. The quantity of data can properly support analyzing, inquiring and statistic.

## 4 Conclusion and Future Work

The logistics management based on SCM concept is a advanced managing thoughts which can promoting efficiency, reducing cast and supporting decision making. Based on a prototype manufacture plant, the logistics is analyzed by means of SCM concept and the model of the logistics management is established. The tool-setup management subsystem is developed and has successfully used in this plant. The application results show that the system meets the needs of expecting.

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## 创刊征稿

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经国家科技部批准,《Journal of Electronic Science and Technology of China》(英文学报,中译刊名《中国电子科技》)刊号:CN51-1658/TN)将于近期创刊。本刊是教育部主管,电子科技大学主办,反映我国电子科研成果的学术类双月刊,设有学术论文、技术报告、前沿综述、研究简报、重大成果、专利推广、技术合作等栏目,主要面向海外发行;学校十分重视本刊建设,将力争在短期内办成被国内外重要数据库收录的精品期刊。

《JESTC》、《电子科技大学学报》、《电子科技大学学报(社科版)》由电子科技大学学报编辑部编辑出版,2003年电子科技大学学报荣获第二届国家期刊提名奖,在全国180个获奖科技期刊中位居第37名。

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